

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York. Entered at the Post Office, New York, as Second-Class Matter.

Vol. XXXIII: No. 2.

New York, Thursday, January 10, 1884.

\$4.50 a Year, Including Postage.
Single Copies, Ten Cents.

Speed on English Railways.

The London Railway News gives the following figures from a paper by Mr. E. Foxwell on English express trains:

Run.	Miles.	Run.	Miles.
Grantham and King's Cross.....	105	2 4	51
Leicester and St. Pancras.....	99	2 7	47
Carlisle and Edinburgh.....	98	2 20	42
Nuneaton and Willemsden.....	91	1 57	47
Derby and Liverpool.....	91	2 3	44
Preston and Carlisle.....	90	2 10	41
Skipton and Carlisle.....	86	1 55	45
Chester and Holyhead.....	84	2 0	42
Rugby and Euston.....	82	1 50	45
Grantham and York.....	82	1 39	50
Newcastle and York.....	80	1 42	47
Victoria and Dover.....	78	1 45	44
Paddington and Swindon.....	77	1 37	53
Cannon Street and Dover.....	74	1 39	45
Carlisle and Carlisle.....	73	1 31	48

"Running average" includes time of making stops at stations. Its difference from "average speed," or time from platform to platform, excluding time lost in stops, is shown in the following table of the long runs in England:

No. of	Aver.	Run'g.	Mile-	
trains.	speed.	aver.	age.	
Midland.....	104	53	46	5,512
Northwestern.....	98	50	45	5,580
Great Northern.....	73	50	48	8,616
Great Western.....	24	56	48	1,344
Great Eastern.....	24	56	48	1,362
Brighton.....	23	45	42	1,047
Northeastern.....	20	56	44	1,120
Southwestern.....	13	47	44	615
Southeastern.....	12	66	42	706
Chatham and Dover.....	8	63	45	504
Caledonian.....	8	59	45	476
Glasgow and Southw.....	8	58	44	498
Manch., Shef. and Lin.....	8	48	42	390
North British.....	7	60	40	428
Total.....	406	58	45	23,550

Mr. Foxwell thus concludes his very interesting paper: "During the last ten years the mileage of our express trains has, roughly speaking, increased about 25 per cent., and their average speed about two and a half miles per hour, while the weight of the train has increased from 30 to 50 per cent. in many cases. (Third-class passengers came into express generally about 1873.) This has taken place during a long-drawn depression of trade, and is, perhaps, one of the sequelae of that depression (cheap materials). It brings out, however, the pleasant fact that industrial dullness has not demoralized the excellence of workmanship in those industries essential to a railway. The mileage and speed of express trains in England is so much greater than in the rest of the world that any reflection on the fact must send a glow of satisfaction through every Englishman. For what is implied by this superior speed? We quote from the address of Mr. Perry Westmacott to the Institute of Mechanical Engineers, at their meeting in Belgium last July, an address entitled 'High Speed and High Workmanship':

"Mechanical energy increases as the square of the speed, and so it may be said that the mental energy and skill required to carry on work increases also at something like the square of the speed with which the work is performed. The materials used must be far stronger and far finer; everything must be well proportioned and balanced; there must be the most perfect arrangement in each structure, and in every part of a structure, and thus we may say the higher the speed the better the work."

The Livadia.

The celebrated yacht Livadia, built by the well-known Scotch shipbuilding firm, Messrs. John Elder & Co., of Glasgow, some three years ago, is now a coal hulk in the harbor of Sebastopol, Russia. The Livadia, as many of our readers will remember, was the steam yacht built for the Czar of Russia in 1880, and never before had there been such an extravagant innovation upon naval architecture. The vessel was constructed with tiers of deck houses, and the hull was lost in a projecting basement which supported a facade of pillars. "To gain an idea of the internal accommodation," said an English yachting paper at the time of her completion, "is not easy from an external view, which exhibits the broadside of the yacht, with two tiers of deck houses over it. But, besides the hold, the yacht is built with four decks—platform deck, main deck, upper deck and awning deck—crowded with saloons and staterooms, and containing, besides the equipment of a steamer and a palace, novelties which must read like the impossibilities of fiction and leave the Livadia unrivaled. To tread corridors paved with marble and find bulkheads paneled with the most exquisite patterns of tiles hardly lessens the astonishment of discovering that a magnificent marble fountain decorates the Emperor's saloon, and that baths for the imperial family are hewn out of solid blocks of marble. Nothing will better suggest the dimensions of the yacht than to learn that coal bunkers, holding 200 and 300 tons of coal, are filled by means of a railway connecting with various coal shutles. Among other surprises are the engines for the electric lights which illuminate the interior as well as the exterior of the yacht, for the yacht will carry forward a masthead lantern, which is to be an electric light bright enough to get mistaken in the English Channel for the South Foreland under way. The side lights are electric lanterns, which will display to passing vessels an unaccountable brilliancy. These but suggest some of the wonders of the Livadia, which must carry to the borders of the Black Sea more startling surprises than she has left behind in the Clyde, for it will hardly be doubted that one purpose

before the designer of the yacht has been to magnify the awe and mystery with which the credulous Asiatic regards the life and person of the White Czar."

The engines and boilers occupied an immense amount of space in the center of the vessel. The central screw and the two quarter screws were worked by three separate engines, with separate boilers, and were altogether unconnected. The engines were of 10,500 horse-power. Upon the upper deck ranged an immense house from the stern to within 20 feet of the bow. This deck house was so much narrower than the steamer that a gangway was afforded on both sides between the house and the rail. The after part of this house was occupied by the apartments of the Grand Duke Constantine and by staterooms for the officers of the ship and the suite of the imperial family. Staterooms of comfortable dimensions and fitted with elegant furniture surrounded all the corridors and the sides of the vessel. The fore part of the upper deck house was the imperial dining saloon, with the sitting-room, boudoir and bedrooms of the Emperor and Empress on each side. The Empress occupied the port side, and upon the same side

men. She was a failure. This was demonstrated soon after completion, as in a gale in the Bay of Biscay she was almost wrecked, and those on board never wanted to make another trip in her. And yet it was said, upon her completion, "that the odd appearance of the vessel is due to a profound consideration of scientific difficulties; that which looks like the wildest of vagaries is the result of ingenious calculations; and that without any purpose besides the practical fulfillment of theoretical principles has this strange and most unaccountable vessel been designed."

The Iron Trade Outlook in England.

Under this head the London Ironmonger has the following:

Now that the end of the business year is so nigh at hand, the future of the iron trade is being discussed with an eagerness which in many quarters amounts to positive anxiety. The operations of many months past have been on a fairly large scale, but almost all values have been steadily declining, until at the present time it is palpable that in some lines of business only a narrow margin

possible remedy under the circumstances, namely, the stoppage of a number of furnaces, mills and forges. In this country we move more slowly, and may be expected to imitate our American cousins under compulsion—that is to say, no firm here will stop which can struggle on, and no organized policy of restriction will be adopted, owing to the want of harmony among the ironmasters. In the Bessemer steel industry matters are more under control, and we may possibly witness a concerted limitation of the output therein. In the iron trade, on the other hand, the fittest—that is to say, the best equipped, the best situated and best financed concerns—will survive, and the weak will go to the wall. More or less serious trouble may arise during the process of extinction, but the trade will ultimately benefit, and capital will find no attraction in the business during the period of depression.

In America the revival will almost certainly be more pronounced and earlier than with ourselves, but it is very improbable that the revivification of the trade there will largely benefit ourselves. In the absence of any really radical reduction in the tariff of

been stimulated and sustained, and apparently only by further reductions will it be maintained at even its current volume.

There are certain branches in which even the barest values will not serve to uphold the consumption. Of these the chief is shipbuilding, which is acknowledged to be in a declining condition. Old orders have been, and are being, worked off without other contracts being secured; hence the North of England seems certain to lose a source of trade which has latterly absorbed from 80 to 86 per cent. of its entire make of manufactured iron. It does not follow, of course, that this large business is to fall off entirely and at once, but it appears reasonably certain that much of it is destined to be lost for some time to come. Here, therefore, we have a factor which is bound to have most weighty influences. The North of England is the largest ironmaking district of the whole world. With a decrease of, say, 50 per cent. in the demand for its finished products, its smelters must suffer severely, and as their pig iron is not sufficiently esteemed for the better sort of foundry or general uses, it is almost certain that the make of pig iron in Cleveland must shortly be greatly curtailed. On the whole, therefore, there seems to be no escape from the conclusion that the make of iron is more than sufficient to supply the demand, and that as a necessary sequence to a further falling off in the consumption of the specialty of the principal ironmaking locality—coupled with a general decrease in the production of steel rails—we shall shortly witness a decided restriction of the production. The only way of avoiding this course of procedure lies in the possibility of an early and appreciable augmentation of the demand. Of that most desirable contingency, however, it cannot be honestly said that there are any reliable or even hopeful symptoms. The whole world is apparently well supplied with iron and steel, and there are no enterprises in hand or in contemplation likely to give rise to an abnormal consumption of either metal. It must be conceded, therefore, that the outlook is anything but brilliant; indeed, it would be no exaggeration to say that the prospect is as devoid of encouraging features as at any time during the past six or seven years.

Fithian's Engine and Gearing.

We recently had occasion to witness an interesting application of an ingenious multiplying gear invented by Mr. Lemuel S. Fithian, of this city, to the driving of electric-light machinery, and which, in view of its many novel features and apparent advantages, will unquestionably be of no little interest to our readers. Before proceeding to the description of the details of the arrangement, it is proper to state that the success of Mr. Fithian's invention depends mainly upon the use of a comparatively small and light fly-wheel, moving, however, with extremely high speed, the momentum thus attained favoring a remarkably steady and smooth motion. The fact that the fly-wheel is of very light weight is perhaps the most striking peculiarity of the invention, the store of power necessary to overcome small temporary resistances being effected by its velocity instead of, as in ordinary cases, by its weight. When we consider the fact that the mechanical effects produced are in the direct ratio of the mass and of the squares of the velocity, it will readily be seen that, say, by doubling the speed we obtain four times the effect, and, likewise, by increasing the speed three times we obtain nine times the effect. It should be remembered, however, in this connection, that, as Mr. Fithian found in his experiments, there is a limit to the velocity to be gained by the size of any special fly-wheel, since if too large the resistance of the air becomes so great as to counterbalance any further gain. This limit has been determined by the inventor as nearly as possible, and the appliances which he now has in operation are so constructed as to yield the most economical results. Another feature of no little value is the arrangement of cog-wheels of only moderately varying diameters to produce a high velocity, unlike, in this respect, the different speed-multiplying gears which have been brought to public notice in past years.

Figs. 5 and 6 of our annexed engravings readily explain the mechanical details and general arrangement of parts, Fig. 5 being a front and Fig. 6 a top view and longitudinal section.

Referring to these, we would say, by way of explanation, that the letter A designates a shaft which is supported in bearings formed in the standards B B, Fig. 6. Mounted firmly on the shaft is an internally beveled cog-wheel, C, which works with a smaller wheel, D, the latter being placed at an angle, as indicated. It is also arranged independently in fixed bearings formed in a horizontal bar, E, which is supported at right angles to the shaft A, on the standards F F, more clearly shown in Fig. 5. This bar is so constructed as to pass around the shaft A, being provided with a bend arranged either above or below it. At the point where the gear-wheel D is fixed, its supporting bar, carried by E, is so shaped as to enable the wheel to mesh with C at a proper inclination. G is a large double gear, which may be of equal diameter with the gear C, and is mounted loosely on the shaft A, being provided with an elongated sleeve or hub, by means of which it is steadied. On the hub of this gear-wheel G is a small beveled pinion, b, with which the stationary intermediate gear-

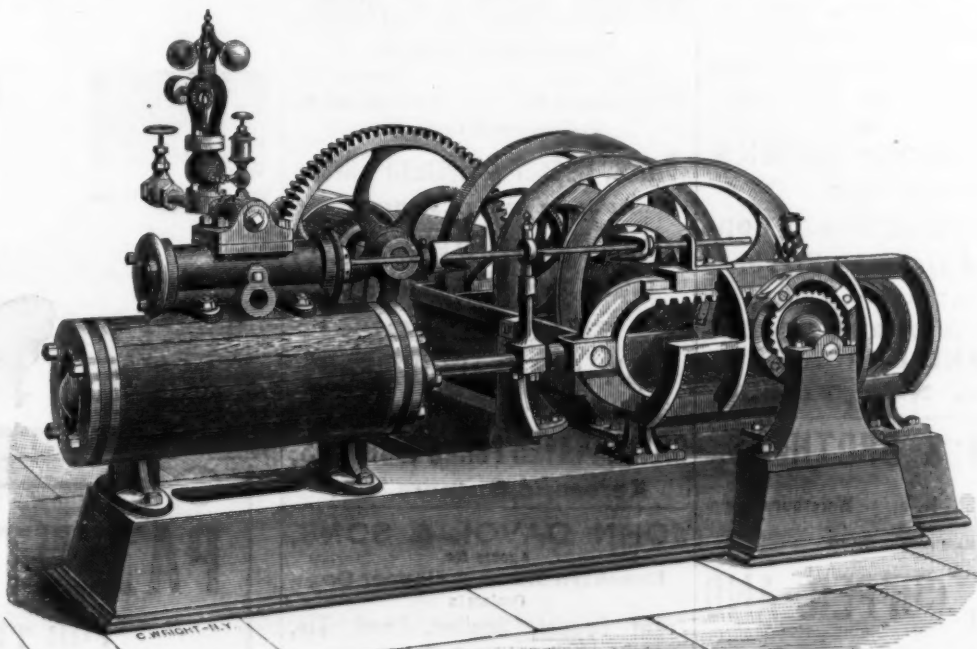


Fig. 1.—Perspective View of Engine and Gearing.

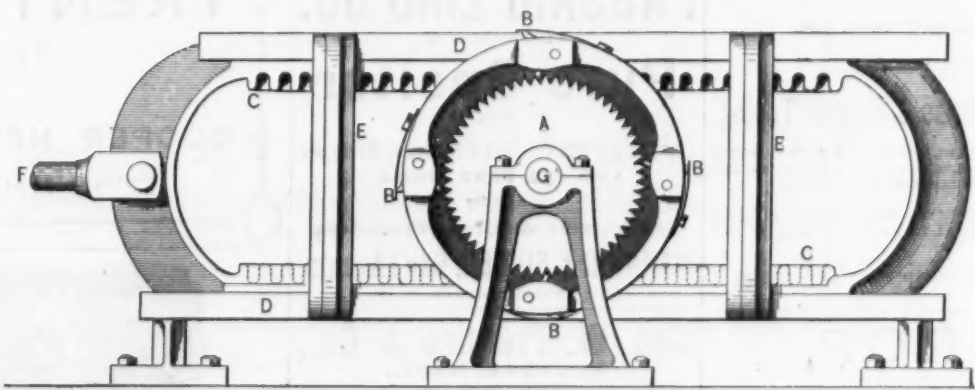


Fig. 4.—Enlarged View of Rack and Dog Disks, Transmitting Power to the Shaft.

FITHIAN'S ENGINE AND GEARING.

was a small but handsome suit of six rooms for the use of the imperial family. This suit was beautifully finished in walnut and satin woods, designed so that the belts of satin wood looked like belts of gilding. The imperial saloon was Crimean Tartar in its decoration. Under the cornice was a frieze of handsome tiles of Persian character. A margin of Mexican onyx separated this work from a geometrical arrangement of walnut and satinwood. The floor, like most of the saloons, was of polished oak parquet. The hangings were of Eastern pattern. The sitting-rooms and boudoir were of the costume of Louis XVI, in which tapestry panels occupied the spaces between the satinwood pilasters. In the imperial bedchambers baths transformed into beautiful couches were cut out of solid white marble. Gold and color were used in the decoration of the roofs. The corridors which separated the imperial apartments from the rooms of the suite were paved with black, white and red marble.

The measurements of the Livadia were as follows: Extreme length of the "turbot" (the name given to the sponsons surrounding the hull, forming an oval the whole length of the vessel), 230 feet; extreme breadth of the "turbot," 153 feet. The hull was immersed 6 feet, with an increase of draft aft through the keel slanting down to protect the central screw. The area of the yacht's floor was 14,500 feet. The nine boilers held 400 tons of water. The extreme length of the yacht was 260 feet, with a breadth of 110 feet. The Livadia had a crew of 260

divides selling prices from the actual cost of production. The question, therefore, is whether this bare margin will also be swept away, or whether there are any reasonable grounds for assuming that bottom values have been reached. In discussing this issue and its probabilities we cannot hope to bring forward facts or figures which will be convincing or satisfactory to all our readers, inasmuch as what applies to one works or concern is wide of the mark in another case. What may be usefully and instructively done, however, is to condense into as brief a space as possible a mention of some of the leading factors of the problem under consideration.

To begin with, it is undoubtedly important to consider the mutual relations of supply and demand the world over. On this head there is a consensus of opinion on the part of those who are qualified to express such opinion that the world is at present producing more iron and steel than it is able to use. That being so, how is the surplusage to be disposed of? Heavy stocks lie in various places, and the oversupply is inexorably promoted by the low selling values of the day. Unless a certain stoppage be adopted at any given work, iron must be produced largely in order to be produced cheaply. Half measures are of no avail whatever in the existing state of the market; hence it is that overproduction has gone on until stocks are almost unmanageable, and prices lower than for many years past. In the United States this dilemma has been recognized and met by the only

the United States, we shall be wise to look upon that market as being almost entirely lost to our ironmasters. Such a tariff revolution is most improbable; therefore prudent men will exclude all American contingencies from their calculations. The next thing is to study the figures relating to the production, consumption, exports and reserve stocks of the year, so soon as these shall be available. At the time of writing these statistics have not been issued, nor will they be published for some little time to come, with the exceptions of the returns of the Scotch, Cleveland and West Coast pig-iron trades. In each of these three districts stocks are now less than was the case a year ago, while the shipments from Scotland and Cleveland are larger. In Scotland the make has been smaller, but in Cleveland larger, while on the West Coast the output has been undergoing a diminution for some time past. From other parts of the country we have no reliable statistics and very little information as to the unsold stocks of pig and other iron. On the whole, however, there seems to be some ground for inferring that stocks are not larger than at this date last year; possibly they are a few thousand tons less, bearing in mind the smaller number of blast furnaces at work during the past two or three months. In either event it may be taken for granted that the demand has been readily supplied throughout the year by very little more than three-fourths of the blast furnaces, and without encroaching upon stocks to any material extent. Only by continually dropping prices has the demand

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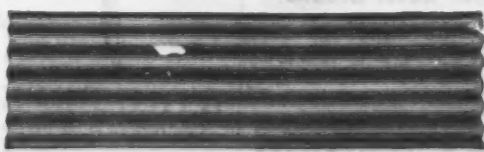
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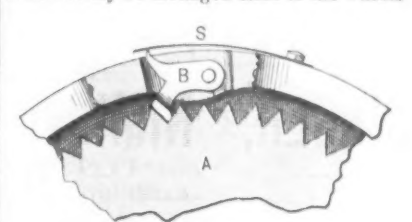
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wheel D is arranged to work. The large wheel G, when put in motion, is thus caused to revolve upon the shaft A in a direction opposite to that in which the shaft and gears C D are revolving. In front of the gear G is a lever, H, provided with a bent or slotted arm arranged to form a bearing for an intermediate gear, I, which may be of equal diameter with the small gear D, and is also arranged at an angle with the wheel G with which it works. Movement of the wheel G naturally causes the wheel I to move in the same direction or in a direction upon its own axis contrary to the revolution of the shaft A; but as the gear I is journaled in the lever H, which is tightly fixed to the shaft A, it will be seen that as the shaft is revolved the gear I has also imparted to it a revolution around this shaft. It will furthermore be seen, by reference to Fig. 6, that the cogged wheels C and G are chambered, so that the bearings of the gear-wheels D and I may be arranged close to the wheels



Fithian's Engine and Gearing.—Fig. 3.—Enlarged View of Fuel and Ratchet.

C and G without impeding their movements. The movable intermediate gear I meshes with the beveled pinion c, which is part of an elongated hub or sleeve, K, mounted loosely on the main shaft. It will readily be seen that the sleeve K is caused to revolve in the same direction as the shaft A, but at a greatly increased rate of speed.

The part K may be attached to a gear or pulley for transmitting its motion to any desired point, and it may also be provided with a fly-wheel to insure a smooth and steady motion. The method adopted by Mr. Fithian, of arranging the movable gear-wheel I in a bearing adapted to revolve with the shaft A, enables the gear I to exert a greatly increased leverage upon the pinion c, which is attached to, and forms a part of, the hub K. The increase in the number of revolutions of the latter, as compared with the number of revolutions imparted to the shaft A and gear C, will depend upon the relative diameters of the intermediate gear-wheels and the number of cogs with which each gear is provided. The relative diameters and the number of gears may, of course, be increased or decreased within proper limits as found convenient, so as to impart any desired speed to the sleeve K without increasing the initial power. The construction of the gears C and G in being chambered, as already stated, insures compactness and enables economizing of space without interfering in any way with the motion of the several gears. It should, moreover, be remembered that the "master arm" or "master wheel" (H, Fig. 6), as Mr. Fithian calls it, is rigidly connected with the shaft A, and any power applied to the shaft is thus directly transmitted to this piece. By a suitable adoption of sizes of cog-wheels, Mr. Fithian can secure any desired multiple in the gearing, and in one of his appliances, which, as previously mentioned, is now working in connection with a dynamo being driven by a

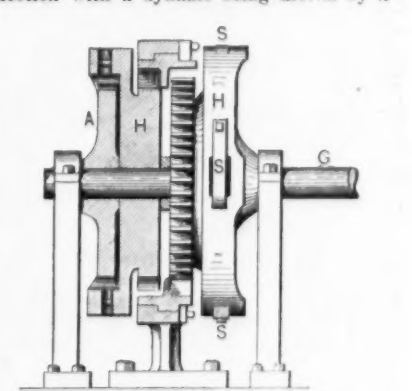


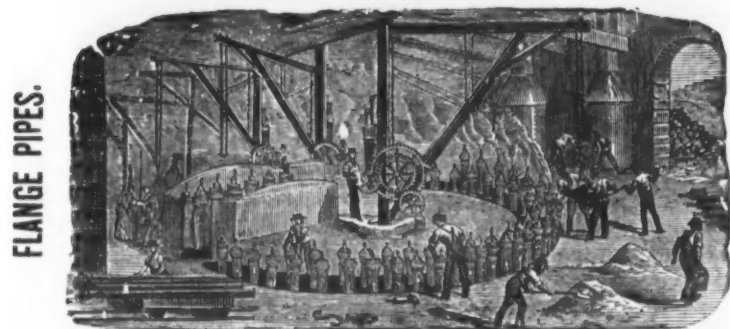
Fig. 4.—End View and Section of Rack and Dog Disks.

steam engine (Fig. 1), the speed of the driving pulley, as compared with the speed of the shaft directly connected with the engine, is as 50 to 1.

Referring to Fig. 1, which represents an engine and multiplying arrangement now working at the office of the New York Electric Motive Power Company, of 224 Center street, of this city, the reader will at once become impressed with the somewhat unusual method adopted of transmitting motion from the engine to the main shaft. Dispensing with the connecting-rod and crank, Mr. Fithian adopted a more direct means of transmission, consisting, as shown in Fig. 2, of a double rack, D D, the upper and lower rows of teeth being placed on opposite sides, more clearly indicated in the end view, Fig. 4, and two cog-wheels, loose on the shaft and furnished with dog disks H, an enlarged view of a part of one being shown in Fig. 3. The two rows of teeth in the rack are so arranged as to work properly with these loose cog-wheels, and when moving, say, from right to left, the outer cog, operated by the upper rack, turns the shaft by means of the ratchet-wheel A and pawl B, the latter being held down by a spring, S. On the other hand, when moving from left to right the power from the engine is transmitted by means of the lower rack and a similar arrangement of cog and ratchet wheels and pawl, shown in Fig. 4. During this stroke the pawl B overcomes the resistance of the spring S and passes over the teeth of the ratchet-wheel without producing any effect. One of the chief advantages claimed for this method of transmitting motion from the engine is that there are no dead-centers, the power always being applied at right angles to a lever-arm equal in length to the radius of the loose cog-wheels, and the

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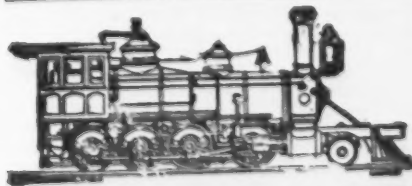
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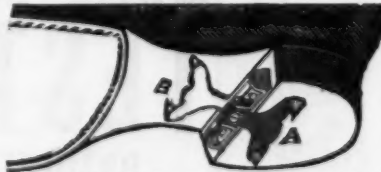
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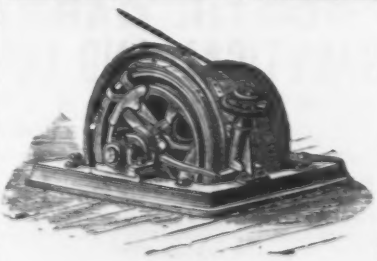
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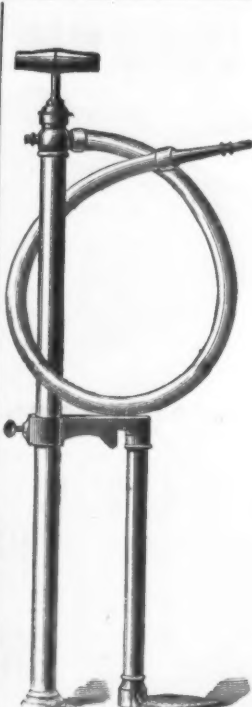
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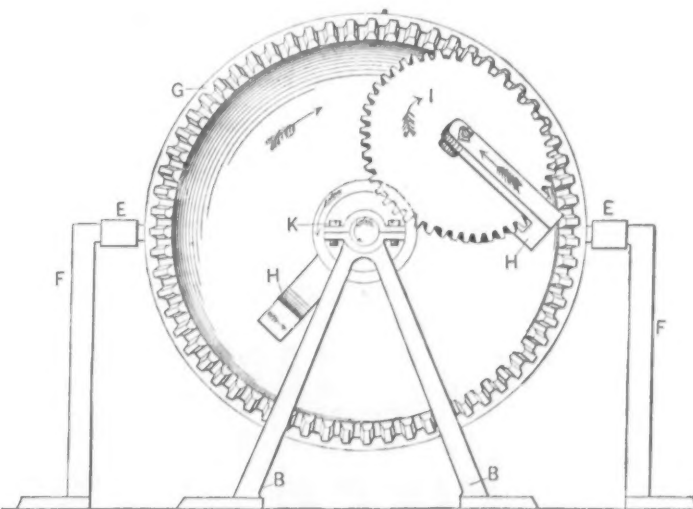
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engine may consequently be started at any point in the stroke. The gear-wheel at the end of the shaft A in one of the engines now working is 12 inches in diameter, gearing with a 24-inch wheel directly attached to the dynamo. Owing to the peculiar method of transmission employed, and the large leverage introduced wherever possible, Mr. Fithian is enabled to run his dynamo, operating some seven arc lights of nominally 2000 candle-power each, with a surprisingly low expenditure of power—so low, in fact, as to give rise to doubt in the minds of many as to the correctness of the figures. Application of the indicator, however, and a careful calculation of the horse-power developed, have fully confirmed the claims made in this direction. The engine measures 6½ x 19 inches, working with about 50 pounds pressure, and makes about 25 double strokes per minute. Both Mr. B. H. Jessup and Mr. R. B. Fithian, president and secretary respectively of the company,

of trade and the reduction of taxation. With so important a concession to make as the right to fish in Canadian waters, the Government can find a solution of the question President Arthur propounds for the consideration of a Congressional commission in a reciprocity treaty. There are substantial advantages to be gained by both countries in a treaty covering coal, lumber, agricultural products, fish and other articles of natural production, and as the Canadian Parliament has recorded in the statute book its willingness to enter upon negotiations for reciprocity of trade, it remains for the United States to take the initiative, having the assurance that its advances will be favorably entertained.

A Conductors' Home.

Upon the fourth floor of the magnificent Broad Street Station building, on the corner facing Fifteenth and Market streets, says



Fithian's Engine and Gearing.—Fig. 5.—Front View of Gearing

as well as Mr. Lemuel S. Fithian, the inventor of the gear, will be found ready to give all further particulars relative to the engine, and we do not doubt that a visit paid to them will prove both interesting and useful.

Telephone Statistics.

Recent statistical data as to telephonic communications in the two hemispheres present some decidedly interesting figures. Thus in the United States the different companies have upward of a hundred thousand subscribers among them. Next to the United States comes England, where there are telephonic nets in 47 places; still the number of subscribers does not exceed 4946, of whom there are 1564 in London, 692 in Manchester, 681 in Liverpool and 600 in Glasgow. In France no more than eight cities have telephonic nets; they have 3640 subscribers among them, of whom there are 2422 in Paris. Berlin, with half the population of Paris, has no more than 551 subscribers, and 10 German cities muster among them no more than 2322. Belgium, which is a very small country, comprises 2322 sub-

scribers—that is to say, exactly the same number as the German Empire. In the Austro-Hungarian monarchy only Vienna, Pesth and Trieste possess telephones, with respectively 600, 300 and 30 subscribers. Italy is very much further ahead already, since there are 12 places in the peninsula which have telephones, and foot up among them as many as 2522 subscribers. In Russia telephones have been set up in Moscow, St. Petersburg and Odessa, but in other places also licenses have been given out. Switzerland has telephones at Berne and Zurich, Holland in Amsterdam and Rotterdam, and Denmark in Copenhagen only. In Sweden a concession has only been given for Stockholm, but it is known that telephonic arrangements are being made in other cities as well. In the East Indies there are telephones at Calcutta, Madras and Bombay; in Egypt, at Alexandria and Cairo, and in Mexico in the capital of the Republic.

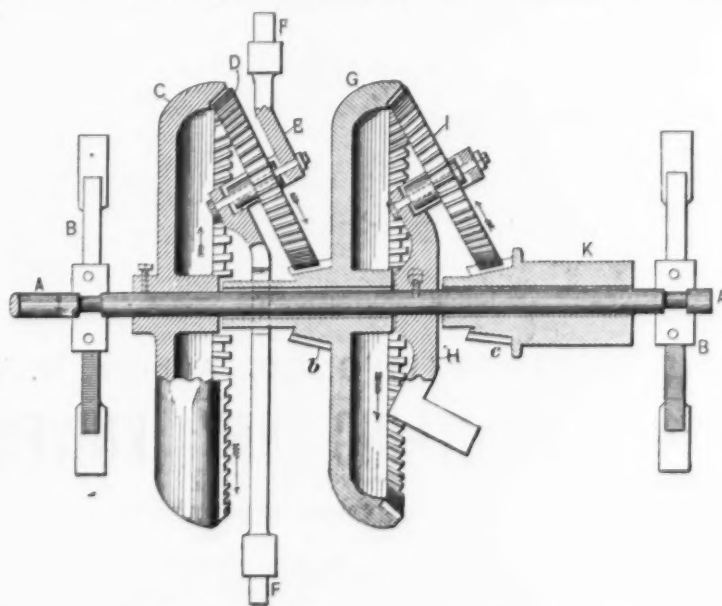


Fig. 6.—Top View and Longitudinal Section of Gearing.

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seats, or upholstered in hair-cloth rep. The library tables are covered with daily papers, magazines, atlases, encyclopedias and handsome pictorial volumes, as "Picturesque America." Chess, checkers and dominoes are the only games allowed. The walls are literally covered with large photographs of Pennsylvania Railroad scenery, portraits of prominent railroad officials and a number of fine engravings.

The immense bookcases are filled with a remarkably good collection of several hundred volumes, embracing nearly all of the standard works of English literature. The books are neatly and uniformly covered with heavy, dark paper outside of their bindings. There is a librarian in charge, and all using the reading-room have the privilege of taking the books home. Most of the volumes were provided by the railroad company, but several donations have been made by outside friends. The same is true of some of the pictures. The finest gift was that of a handsome Steinway piano, presented by Mr. Reed, of Philadelphia. A violin keeps the piano company. Some of the conductors are fine musicians and musicians. Upon the evening of the 25th of every month they hold in this room an informal concert or entertainment among themselves. The performances are usually by amateurs, drawn from their own ranks, assisted by their lady friends. Occasionally professional talent is enlisted. Conductors and other railroad employees take the greater part of their

Canadian Reciprocity.—The Montreal Gazette says: "The Americans require access to our waters, and if they do not obtain it they will pay in the shape of duties a large amount of money to the Canadian people. There ought to be a basis for the negotiation of a reciprocity treaty in this matter. The United States Government is in a position to remit a considerable amount of revenue duties, and the drift of public opinion is in the direction of the extension

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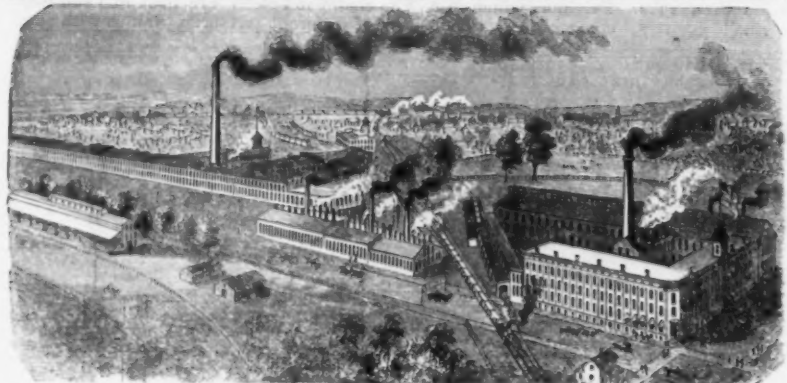
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The blade is best cast steel, spring temper, easily sharpened, and is giving universal satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for exports as well as home trade, and it seems destined to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each of 50 pounds weight, suitable for shipping by land or water to any part of the world.

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Cant,
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Cotter Equaling,
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Feather Edge,
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Flat,
Flat Equaling,
Flat Wood,
Gang-Edger,
Ginsaw,
Gulleting,
Half-Round,
Half-Round Wood,
Hand,
Hand Equaling,
Handsaw Blunt,
Handsaw (Double-End),
Handsaw Taper, single-cut,
Handsaw Taper, double-cut,
Handsaw Taper, slum,
High Back,
Hook-Tooth,
Knife,
Knife Blunt,
Lead Float,
Lightning,
Machine Mill,
Mill,
Mill Blunt,
Mill Pointing,
Pillar,
Pitsaw,
Reaper,
Roller,
Round,
Round Blunt,
Slotting,
Slim Handsaw Taper,
Square,
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Baker's,
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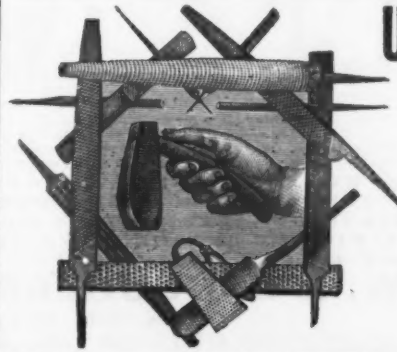
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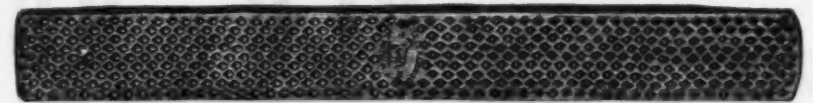
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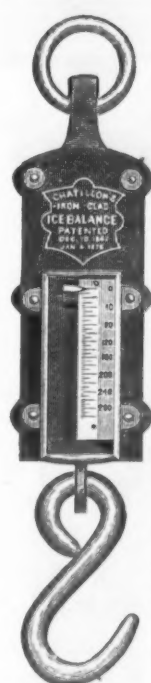
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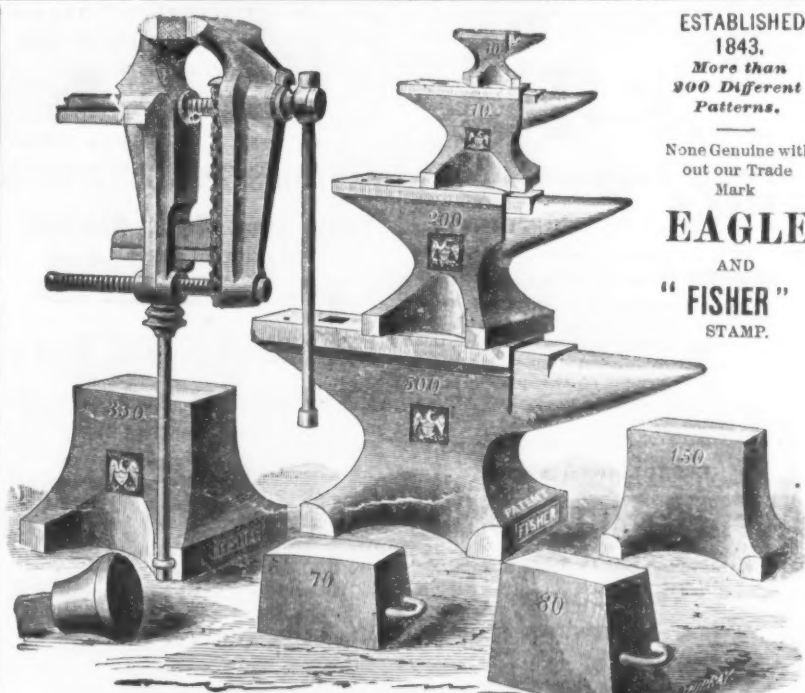
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LATEST LEGAL DECISIONS.

CUSTOMS—EXCESSIVE DUTIES—APPEAL TO SECRETARY OF THE TREASURY—LIMITATIONS.

A merchant in New York protested against the rate of duties required of him on certain goods he had imported, and duly appealed to the Secretary of the Treasury from the decision of the collector in the summer and fall of 1871. The Secretary made no decision, and in 1879 suit was brought against the collector, who set up the defense that, as the suit had not been brought within six years, it was barred. By the act of Congress it is declared: "No suit shall be maintained in any court for the recovery of any duties alleged to have been erroneously or illegally enacted until the decision of the Secretary of the Treasury shall have been first had upon the appeal, unless the decision of the Secretary shall be delayed more than 90 days from the date of the appeal in case of an entry at any port east of the Rocky Mountains, or more than five months in case of an entry west of those mountains." The collector's counsel argued upon the trial that, though the Secretary had made no decision, the statute of limitations began to run from 90 days from the submission of the appeal to the Secretary. The court gave him judgment on this ground, and the plaintiff carried the case. *Armon vs. Murphy*—to the Supreme Court of the United States, where the decision was in his favor. Mr. Justice Matthews, in the opinion, said: "There is no language in the act of Congress requiring the conclusion that the importer must sue for the excessive duties paid immediately upon the expiration of 90 days; it is inconsistent with the terms actually employed, and is not founded on any sufficient reason. The right to sue at all before the final decision of the appeal is merely inferred from the form of the exception, and in its nature is permissive, and not peremptory. The prohibition to sue before the decision of the appeal is rendered in express, with the saving only of the right on the part of the claimant to sue before the final decision is rendered, if such decision is delayed for more than 90 days after the date of the appeal. But there is nothing which requires him to sue until after such decision has been rendered. The whole purpose of the saving in his favor evidently is that he shall not be required to wait longer than 90 days after his appeal for an adjudication. There is nothing to forbid his waiting without suit as long as he has reason to expect a favorable decision upon his appeal."

CARRIER—TRANSPORTING GOODS BY DIFFERENT ROUTES.

A large quantity of soda-ash was shipped from New York to Detroit by the line of a steam carrier, who was engaged in conveying goods to the West, employing several steamers on Lake Erie and the other lakes. In the bill of lading among other things it was provided: "Changes may be made in, and parts of the property may be carried or forwarded by, different means or routes of transportation. Any property which, from its bulk or kind, is usually carried on open cars may be so carried." The rate of freight was 20 cents for each 100 pounds; freights by schooner, 12 cents. The consignees had the goods shipped by steamer, as they wanted an expeditious carriage. There was a delay at Buffalo for some days, and then they were forwarded by a sailing vessel, which caused great loss of time. The consignees refused to pay beyond the sailing-vessel rate of freight, but were compelled to pay 20 cents, as the carrier refused, otherwise, to deliver the goods. A protest was duly made, and then an action was brought to recover the overcharge, and the defendant recovered. The plaintiff took the case—*Blitz vs. Union Steamboat Company*—to the Supreme Court of Michigan, where the judgment was affirmed. Judge Cooley, in the opinion, said: "It is contended on behalf of the defendant that under the bill of lading the shipment by rail was rightful, the option of choosing other means of transportation than by steam having been expressly given. But we cannot think that this option could be arbitrarily exercised. The carrier undertook to transport the goods by steam on the lakes, but to provide for contingencies, stipulated for the privilege of sending by other means of transportation when it should be reasonable to do so. But when it exercised that privilege it ought to show sufficient of the circumstances to make it apparent that it was not unreasonable to do so, and that the contingency arose, which it acted upon in good faith in deciding upon the change. There was scarcely any attempt at such a showing in this case, and therefore we agree with the plaintiff that apparently there has been a breach of contract. But the plaintiff does not count upon a breach of the contract. Damage might have come from loss of the goods or from injury in carriage or delay. If none of these consequences followed, it was of no importance to the plaintiff that the goods were not sent by steamer, as he intended. He has not shown that he was damaged."

PARTNERSHIP—INSOLVENCY—PRIORITY OF DEBTS OF INDIVIDUAL PARTNERS.

One member of a firm gave to C four notes which were secured by a deed of trust upon his individual property. One of these notes was for money lent to him, and the other notes were for money lent to the firm. The firm and all of the members of it were insolvent when the deed of trust was executed. The holder of the individual note demanded that his note should first be paid out of the proceeds of the foreclosure sale, on the ground that the individual estate of a partner must first go to pay his individual debts. In this case—*Shakelford vs. Clark*—the Supreme Court of Missouri sustained a judgment below against this contention. Martin, C., in the opinion, said: "No principle in the law of partnership is better settled than that the creditors of a partnership have priority over the creditors of an indi-

vidual member thereof in respect to the funds of the partnership. This right arises from the right of each partner to an equitable lien upon the partnership property to pay the firm debts, and his lien passes to the creditors of the firm. From this priority of the partnership creditors upon the partnership funds, it does not follow, as a logical deduction, that the individual creditors have a like priority upon the separate or individual funds of the different members of the firm, for the reason that no lien, legal or equitable, exists in their favor against such funds. A separate creditor has nothing analogous to a lien, legal or equitable, on the property of his debtor during his life.

ATTACHMENT—SHARES OF NON-RESIDENT DEBTOR IN FOREIGN CORPORATION.

The stock belonging to a resident of Massachusetts of a debtor in a Pennsylvania corporation was attached in an action by another resident of Massachusetts brought in a New York court, upon the ground that, as the corporation held a place of business in New York, this could be done. In this case—*Plympton vs. Bigelow*—the Court of Appeals of New York decided against the validity of the attachment. Judge Andrews, in the opinion, said: "The general principle that attachment proceedings can only be effectual against property within the jurisdiction is clearly recognized by the code. The law is well settled that a corporation has its domicile and residence alone in the sovereignty which created it. That it does business in another State and may be tried there for its own obligations does not bring it there for the determination of the rights of third persons."

John Ericsson.

Captain Ericsson, says the *Boston Herald*, was only a boy when his father's influence got him a place on the Gotha Canal, where he was placed in charge of a section of the works. He carried on operations in Sweden up to his 23d year, at which time he went to England to extend his field of labor, and he has never since returned to his native country. He was one of the competitors in the exhibition of steam engines in which George Stephenson's famous locomotive, the Rocket, had first prize. Captain Ericsson, with his customary dogmatic force, declares that his engine was quite a novelty, attaining far greater speed at the exhibition than the one that took the prize. That was in 1829, three years after Captain Ericsson first landed on English soil. It was seven years later that he adopted the screw propeller, which made a great but unfavorable sensation in shipping matters all over the world. The English Admiralty are conservative if they are anything. They still retain their old fashion of scouting anything whatever that is new or likely to turn over the old system of shipping. They derided the screw propeller in the most decisive terms, and after Captain Ericsson had vainly tried to secure an admission of the value of his work, his temper got the better of him and he left for America. He was 30 years old when he arrived in this country, and during the next few years of his life he had the satisfaction of seeing his propeller scheme demonstrate its own value in the world's navigation. For a long time Captain Ericsson devoted his mechanical genius solely to the production of vessels of war, to which his attention had been turned by his English training.

One of the curious traits of Mr. Ericsson's character is a total absence of anxiety to personally see the workings of any of his machinery. He has never been on board the Destroyer but once since she was completed, although experiments have been going forward steadily ever since the preparations were complete. In fashioning an invention of this kind Ericsson works almost entirely from drawings, and he knows just as well how every part of the finished machine looks, or should look, as though he had handled it a thousand times. Now, in the last of his long years, he rises from his bed just as regularly at 7 o'clock in the morning as he did when a boy. He takes his cold plunge and follows it with his regular swinging of clubs and dumb-bells, just as he has done for years and years. Then he gets into his old-fashioned starched shirt, with limp, standing collar, his broadcloth trousers and coat and his buff duck vest. A breakfast, which Haulan would think a harsh adherence to training rules, follows the operation of dressing. It consists of weak tea, coarse bread and eggs, or some similar dish. After that, hard work until 4 o'clock in the afternoon. Then dinner, largely vegetarian in its direction. From that time until 9 or 10 o'clock at night he sticks closely to his drawing table, outlining curious pieces of machinery for some new development of inventive genius. Here follows the most curious and eccentric part of Mr. Ericsson's routine. Instead of sitting down to rest and think, he puts an old chimney-pot hat upon his head, seizes his cane and goes for a long and circuitous walk, which usually brings him back to his own front door about midnight. Such has been and is the daily life of John Ericsson, mechanical engineer. No cigars or tobacco, no cocktails, no brandy and soda, nothing but exercise, work, midnight prowling, weak tea and a strong temper.

The British Arsenal at Woolwich now contains huge pyramids of spherical shot and shell, which are condemned to the melting furnace for conversion into projectiles more adapted to modern requirements. One heap alone, as described in an English paper, contains about 40,000 of the 13-inch shells which were supplied at the time of the Crimean War, and were the most formidable missiles used in the siege of Sebastopol. The 13-inch mortars from which they were fired have long ago disappeared from use, but lie in hundreds in a distant part of the arsenal, waiting orders for their demolition, and no round shot or shell of any size has been made since the introduction of rifled ordnance and elongated projectiles. They are being all gradually broken up. Another ancient description of shell of the class known as smoke balls and ground light balls has been declared obsolete, and all that are remaining in stores will be destroyed. They are of various sizes, varying from 4½ inches to 13 inches in diameter.

THE Greenfield Vertical Engine

is unequalled by any other in workmanship and quality of material.

2½ to 30 horse-power.

Prices lower than any other first-class engine.

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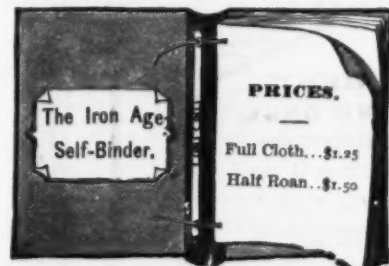
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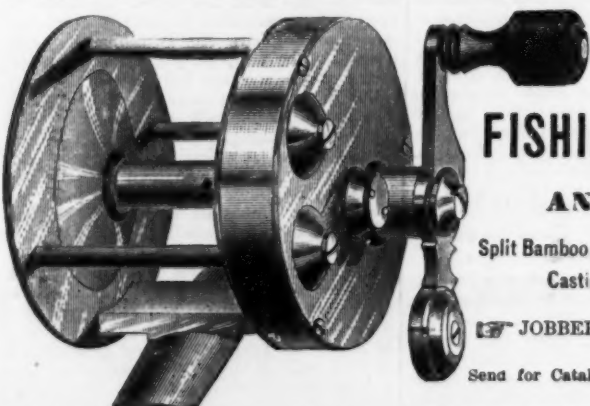
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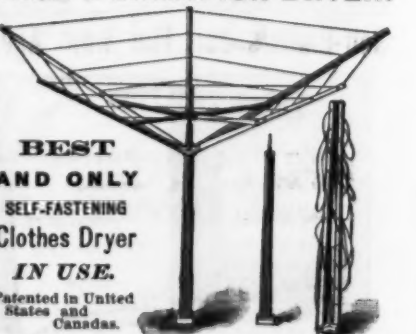
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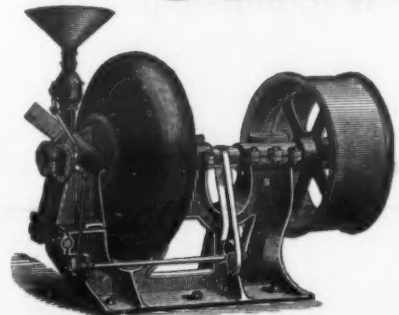


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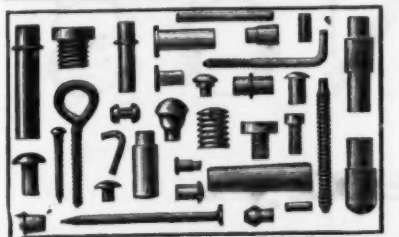
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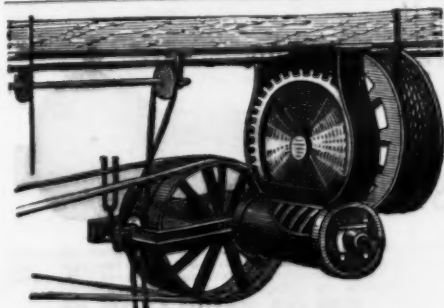
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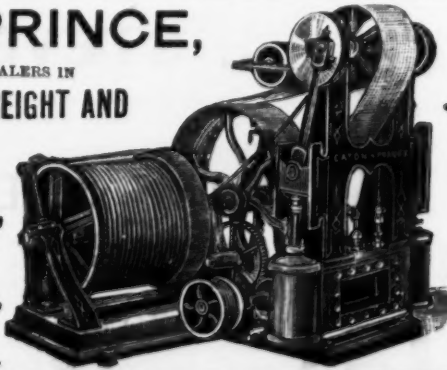
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METALLURGICAL NOTES.

Basic Process at Creusot.

The following facts relative to the basic process as applied to the Bessemer and open-hearth at Creusot appeared originally in *Berg und Hütten Mann. Zeit.*: The basic Bessemer converters are lined with a dolomite containing 53 per cent. of lime, 35.80 of magnesia and 7.70 of silica and alumina. This is heated to redness, quickly pulverized, mixed with 10 to 15 per cent. of tar, and stamped in with heated iron stampers. The tuyeres are made of silicious material. The converter is charged with 16 to 18 per cent. of heated lime and about 1 1/2 per cent. of fluorspar, and is then charged with 8 tons of cast iron taken directly from the blast furnace. After slagging and decarburization, the overblow and recarburization is effected with spiegeleisen containing about 18 per cent. of manganese. The bottom requires repairs after 15 to 20 charges. The sides require renewing after 80 to 100. The cast iron contains carbon, 3; silicon, 1.3; manganese, 1.5 to 2; phosphorus, 2.5 to 3; sulphur, not more than 0.2. The steel produced contains 0.01 to 0.02 of manganese, and 0.03 of sulphur. The slag at the end of the decarburization contains 22 per cent. silica, 12 per cent. phosphoric acid. At the overblow they contain 12 per cent. silica, 16 per cent. phosphoric acid. The steel made by the acid process contains considerable silicon, which is often greater in quantity than the carbon. The quantity of phosphorus, sulphur and silicon is less in the basic steel and the quantity of carbon higher. The quantity of manganese is considerably less. The following is an average analysis of the steel:

	Basic.	Acid.
Carbon	0.45	0.40
Silicon	Trace	0.30
Phosphorus	0.06	0.075
Sulphur	0.029	0.040
Manganese	0.76	0.66
Tensile strain per square mm.	72 kg.	73.2 kg.
Percentage of stretch	16.1	17.3

In the open-hearth process at Creusot the hearth is made of the same dolomite as the lining of the converter. The arch is made of silica brick, which is separated from the basic material by a layer of bauxite. The charge of cast iron containing phosphorus is mixed with wrought iron, which is added little by little. Three to four additions of lime are made and the slag withdrawn from time to time. As soon as a breaking test shows the dephosphorization finished, the recarburization with spiegeleisen begins. The comparison of this work with that of the converter shows that the introduction and repairs to the basic lining are easier in the furnace; that, as the highest temperature is arrived at immediately after the combustion of the carbon and silicon, no attention need be paid to the other foreign constituents in the iron. The slags can be easily withdrawn from the furnace, while in the converter, to effect it, the slags must be very fluid. The dephosphorization commences at once, and there is no fear that after the addition of the spiegeleisen a reduction of the phosphoric acid will take place. As the process takes a longer time, the mechanical tests can be more carefully made. An open-hearth steel of this kind contains:

Carbon	0.16	Phosphorus	0.09
Silicon	Trace	Manganese	0.25
Sulphur	0.03		

The steels are better and more uniform in quality than those made in the converter, though the physical and mechanical tests give practically the same results in samples from both methods. In order to prevent blowholes, the temperature is raised at the time of casting.

Action of Phosphorus in the Blast Furnace.

A late issue of the *Ironmonger* gives the following translation of a paper on "The Action of Phosphorus in the Blast Furnace," read by Director G. Hilgenstock, of Hörde, at the meeting of the Association of German Ironmasters held at Düsseldorf on December 9: There are, said the author, certain quantities of phosphorus which, though originally to be found in the ores that find their way into the blast furnace, cannot be traced in the pig iron. The question is, What becomes of the mysterious phosphorus? It is obvious that it must either get into the slag, or disappear with the gases escaping from the furnace, or mingle with both. In order to sift the matter it becomes desirable to ascertain the exact proportion of phosphorus to be found in Thomas pig. A month's experiments have shown that fully 30 per cent. of the original quantity of phosphorus was to be traced neither in the pig nor in the slag, and it must, consequently, have escaped in a volatilized condition along with the remaining gases coming from the furnace; or, in other words, assuming that there were at first three parts of phosphorus in the ore, and one-third of it is volatilized, 1/2 kg. = 1.1 pound of phosphorus, would escape every minute if the output be 72 tons per day. The author of the paper cited the results of a series of experiments on the subject, and quoted one fact which seemed to favor the theory of the volatilization of part of the phosphorus. A small particle of consolidated gas contained (a), prior to ignition, .53 per cent. of P and 15.17 per cent. of SiO₂; the same (b), subsequent to ignition, P = 1.20 per cent., SiO₂ = 24.39 per cent., and, assuming the proportion of silicic acid to remain constant 100 parts of SiO₂ would contain an accession of 2.01 parts of phosphorus subsequent to ignition. However, no result at all equal to this was obtained in other experiments. The following are the data obtained in other experiments, the proportion of phosphorus to 100 parts of iron being:

	(1)	(2)	(3)	(4)
- P in slag	3.235	3.285	3.25	3.25
	.940	.070	.33	.235
Difference	2.965	3.165	2.92	3.025
Actually traced	2.76	2.74	2.185	3.41

The discrepancies in these figures go to show that when an escape of phosphorus is suspected after going through the calculation, some mistake must have been made in the calculation.

By this and other considerations the author was led to the opposite theory to the one he had at first advocated—that is to say, that phosphorus is volatilized in no perceptible

proportion in the gases escaping from the blast furnaces, and this view, Herr Hilgenstock says, has been corroborated by the results of many experiments, whatever Professor Jinkener may say to the contrary. As regards the proportion of phosphorus to be found in the molten metal and the scoria, the figures obtained in a series of seven experiments are worth reproducing. They are as follows:

	In the pig.				In the slag.	
No.	Si.	P.	Mn.	C.	P.	
1	trace	5.96	.92	.98	2.57	
2	trace	7.29	.86	1.11	2.39	
3	.02	6.24	.51	.95	1.74	
4	.06	6.07	.75	1.19	1.93	
5	.09	4.57	1.98	.90	.38*	
6	.28	3.01	1.69	1.19	.18*	
7	.28	3.79	1.13	1.12	.19*	

* The charge containing less phosphorus.

This shows that, as the proportion of P in the charge increases, a corresponding increase takes place in the slag. In all the seven experiments referred to the iron had been produced by rather a large charge of coke, and from the comparatively small proportion of silicon and carbon the author is led to believe that phosphorus in pig supplies in a great measure both these elements. He was confirmed in this theory by the results of a large series of experiments made by him at Hörde, and illustrated in a series of diagrams produced by him. The maxima and minima of the tabulated results are as follows:

P = 3.26	Si = 1.03	C = 2.01
P = 12.12	Si = .02	C = .87

This shows that the same phenomena are at work in the process of reduction in the blast furnace as in the basic process of oxidation. As far back as 20 years ago Dr. Wedding remarked that silicon elbows carbon out of pig, and now it becomes clear that both of these are in their turn hustled out by phosphorus. Further experiments and calculations make it plain that, in proportion as the quantity of phosphorus increases in the charge, the quantity of phosphoric acid in the scoria is augmented. Again, as the quantity of fuel—or, in other words, the temperature—increases within the blast furnace, the proportion of phosphorus and that of silicon increases in the pig put out. Thus, when there was as much as 14.36 per cent. of phosphorus in the pig there still remained room for .98 per cent. of silicon. The author of the paper likewise found that in proportion as the quantity of silicic acid increases in the slag the quantity of phosphoric acid contained therein decreases. On the other hand, phosphorus seemed to have an unlimited power of alloying itself with iron, almost as unlimited as manganese. One sample produced contained as high a figure as 25.65 per cent. of phosphorus. The following is a summary of the results obtained by Herr Hilgenstock:

1. Of the phosphoric acid entering the blast furnace no traceable quantity is volatilized.
2. Sometimes a large proportion of the oxalic acid in the furnace cannot be reduced, and makes its reappearance in the slag; this occurs to a larger extent:
- (a) The smaller the means of reduction—i. e., the quantity of fuel in the furnace; in other words, the lower the temperature.
- (b) *Ceteris paribus*, the larger the proportion of phosphoric acid within the charge.
3. The more phosphorus that enters the pig the smaller are, *ceteris paribus*, the proportions of silicon and carbon, without the faculty possessed by iron of commingling with silicon and carbon being reduced in proportion.
4. When the charge contains plenty of phosphoric acid, the quantity of phosphoric acid contained in the slag decreases in proportion as the quantity of silicic acid increases.
5. Carbon alone works directly or indirectly as a vehicle of reduction of the phosphoric acid that enters the blast furnace.

The Warwick Furnace Record.

The Warwick Furnace, at Pottstown, Pa., 15 1/2 x 55 foot, made in the third year of its present blast 21,676 tons (2266 pounds) of pig iron, 94.76 per cent. being No. 1 and No. 2 foundry and No. 3 mill, 2.27 per cent. mottled, and 2.95 per cent. white. Fuel consumed per ton of iron, 1.2875 tons, flux consumed per ton of iron, 0.875 ton. The ore averaged 50.2 per cent. Average temperature of blast, 860° F. During the year the furnace was idle one week, 3 1/2 consecutive days the first six months and 3 1/2 days the second, to clean boilers. The other stoppages averaged five hours per week. The fuel used was three-quarters anthracite coal and one-quarter coke. Mr. Edgar S. Cook, the efficient manager, seems determined to have Warwick Furnace improve on former records, and wakes up some of the furnaces which, with richer ores and fire-brick stoves, should excel his work. An average of 425 tons per week, with 50 per cent. ores in a 15 1/2 x 55 foot furnace, and a temperature of blast below 900° F., is good work.

New Iron Shapes.—The Pencoyd Iron Works have issued, for the benefit of engineers, a plate showing several new sections for which they have recently turned up rolls. The plate illustrates three new shapes of angle iron, two new I-beams and a section of Manly & Cooper's patent hand rail, showing it as it comes from the rolls; also a reduced size of it as turned up in finished section. The first shapes mentioned are particularly applicable to bridge and ship work.

The freehold of the whole seaport town of Aberayron, Wales, has been offered for sale by auction. The estate comprises 400 houses, four chapels, two schoolrooms, the town hall and market place, the harbor dues, &c., the manorial rights of Llysven, having a sea frontage of seven miles, and the rights of shooting and fishing. The whole was put up in one lot, together with a large quantity of building and accommodation land; £24,000 was offered for it, but the estate was withdrawn.

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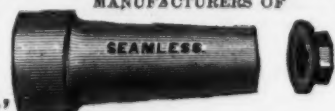
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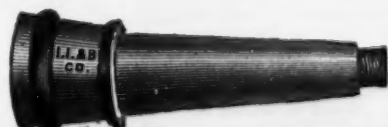
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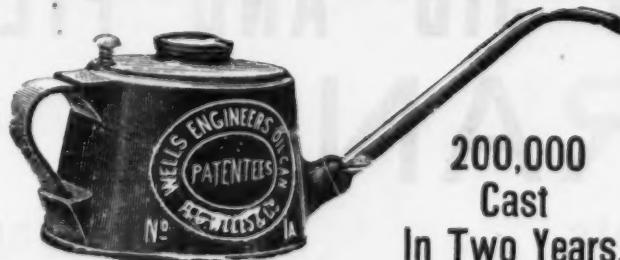
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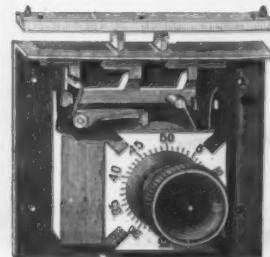
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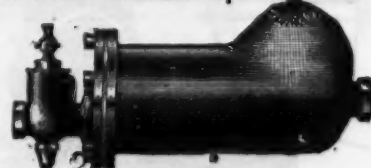
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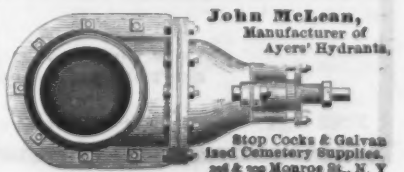
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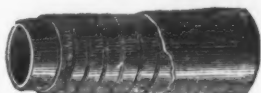
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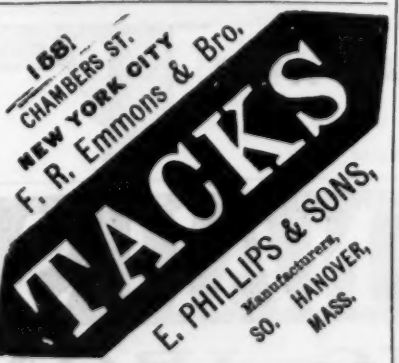
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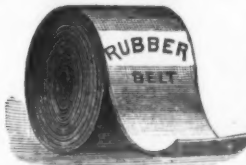
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Pat. 11,268, 213,601



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An improvement in armor plates recently patented in England consists in making the main body of the plate of mild steel, cast to the shape and curve required, the surface of which is more or less covered with chilled iron pieces or studs of varying shapes and dimensions; these chilled pieces by their harder surface being presented to the projectiles, tend to break them up, and further have the effect of diminishing the extent of the starting to which steel plates are liable when struck by a projectile. In cases where the armor plates are to be fixed above the water line in vessels, or wherever the uneven surface would not tend to diminish the speed of vessels, the resistance of the plates to penetration may be further increased by causing the chilled-iron studs to project beyond the surface of the plates for the purpose of deflecting the projectile. In order to carry out this invention a steel plate with suitable recesses is cast, and after its removal from the mold, iron chills are fitted over the recesses, which are then filled up by a suitable mixture of cast iron being poured in; this is chilled by the plate under it and by the superimposed chills, the whole being then annealed in an ordinary annealing furnace.

The Manufacture of Catalan Iron in France.

This industry, which barely 25 years ago was of considerable importance in the Ariège district, is still carried on, says *Le Fer*, in all its primitive style, with more or less prospect of continued vitality. The workmen engaged in it receive about the same wages as those paid in other industrial occupations in that locality. The price of the Catalan iron is not, as a rule, higher than that of the wrought iron now generally used, and is often less. It is only exceptionally used for general work, because it cannot be obtained in the various exact dimensions of rolled bars, and also on account of its hard, steel-like nature, which makes it more difficult to manipulate in working. A large amount is made into bars, suitable for farmers' work, which sell for something like 31 francs to 32 francs per 100 kg. (\$62 to \$64 per ton). Many rough agricultural tools, as plowshares, coulters, mold boards, &c., are made directly from the bloom as it comes from the forge. These parts, being shaped under the large hammer, are naturally not always so well finished as those made under the small tilt-hammer from modern rolled merchant iron, but they are mostly of a presentable shape and find a ready market, as many are convinced that the metal, as it has special properties, must also be possessed of particular virtues. It certainly wears better, on account of its hardness, than the ordinary forgings, and is sold somewhat cheaper—33 francs to 35 francs per 100 kg. (\$66 to \$70 per ton). Flat bars of about 1 m. find a ready market as raw material for crucible steel. Many manufacturers who are renowned for their superior product do not hesitate to introduce in their mixtures large quantities of it. The price is the same as that of bar iron, viz., 32 francs to 33 francs. Makers of scythes, in particular, who usually melt their own material, consume considerable quantities.

The Metals of Antiquity.

Much interest has always been attached to the early history of metals, not only with reference to the date of their discovery, but to the different methods of their manufacture. As throwing some light on this subject, we extract a few items from a paper by Mr. Alfred Tylor, recently printed in a London paper, which discussed the relative dates of discovery of iron, tin and copper. With regard to the metals alluded to, he assigns priority of invention as follows: (1) iron, (2) copper, (3) tin. In support of this contention he argues that the Romans invaded Britain purposely to obtain its metals, then worked extensively there. He finds the Cornish district, or Land's End, described by Ptolemy, the geographer, in the second century, as "Belierium"—that is, the land of mines, "bal" being Cornish for mine. The word is also met with in Irish. In the same manner the skin boats used by the Cornishmen, which so much astonished the Greek travelers, were described by the Greeks under the name of "coracles," evidently a Celtic word from the Celtic root "cren," or "creon," skin. So tin, he thinks, is derived from the Irish word "teine," Welsh "tan," teine probably also expressing brightness. Even in the Malay Peninsula, in the East Indies, a word of similar sound, "timah," still stands for "tin," and not the Greek term for that metal, "kassiteros." Then the Cornish term "iarnn," for iron, is similar to English "iron," German "eisen," Welsh "haiarn," Greek "sideron," in which *ei* is the important syllable. The Latin word "ferrum" is probably a form of "ierrum," and the Sanskrit "ayas" is for iron, metal. Nearly the same word for iron is, therefore, used in all the Aryan languages, while "aes," or "kalkos," stands for bronze or copper and has only a comparatively local extension. The wide spread of the name for iron, or *ei*, is important, as it points to iron being the metal made before the division of the Aryan race, and, therefore, before copper or tin. There is another, and, he believes, a new, argument. The most easy process of copper smelting, which even now is largely used, may have been the only plan known in prehistoric times. To use this process it was necessary to provide iron to precipitate copper from solution. At the present time 6000 tons of iron are sent annually to the Rio Tinto mines in Spain from Great Britain in order to precipitate the copper from solution. It is possible that the discovery of the art of producing crude iron, which would be useful for precipitating copper, may have preceded the invention of bronze, and yet the art of forging difficult pieces may have been a later invention than that of casting bronze cells in metal molds. Iron, if not steel, appears to have been made in Egypt, both in hearths and in crucibles, certainly before 3124 B. C., but bronze was more used in Greece up to 650 B. C. than iron. As iron was made by a simple welding or forging process, its production appears to be a more ancient art than bronze casting, which required large crucibles and mixing

in exact proportions with tin, a process more difficult than in the infancy of metallurgy was likely to be invented. Then one ore of iron, ochre, was the first metallic ore collected, long before the discovery of any of the metal. Accident in the fire might have thus led to the discovery of metallic iron in very early times. Such particles of iron placed in a certain stream in the island of Anglesea (an early peopled district) would precipitate the copper in that stream in a state of pure copper, ready to mix with tin to make bronze.

Company Stores Given Up.—In accordance with an order issued by President Gowen some time ago, the store system under the Philadelphia and Reading Railroad was abolished on the 31st ult. This will create quite a revolution in the trade of Wilkesbarre and other towns, as it is expected that those who have heretofore traded with the company stores will now buy their goods of merchants. For years past the merchants have protested against the "company stores," claiming that it was both injurious to the trader and to all legitimate trade. It was agreed by them that the miner was compelled to deal at the company store from fear of getting into trouble with his superiors, and that the company therefore took advantage of him, and charged him more than a regular dealer would. On the other hand, it was claimed by the proprietors of the company stores, who really merely acted as agents for the mine operators, that they were benefactors to the miner and his family, inasmuch as they gave him credit when he could not get it of a city merchant. The managers also claimed that they dealt fairly with the miner, and never overcharged him. Some of them now claim that the payment of money to the men, and allowing them to deal wherever they please, will only bring poverty to the homes of many. The dealers assert that many miners are unable to take care of their money, and, as a consequence, the first pay they get will be spent furiously, and not in purchasing the necessities of life for their families. Their cash all gone, they will have no credit at the "city" store, and, as a natural result, much suffering will entail. Under the company system groceries could be purchased at the store throughout the month, and on pay day the whole amount was deducted from the laborers' wages. The working of the new system is awaited with much interest.

Change in Postal Rates.—The Postmaster-General has issued an order changing the rate of postage on a number of articles that have heretofore been rated as third-class or printed matter, paying postage at the rate of 1 cent for every 2 ounces. Under this order these articles will hereafter be classified as merchandise or fourth-class matter, upon which the postage is 1 cent per ounce. The following is the text of the order: "The character of paper as an article of merchandise, within the meaning of the postal laws, is not necessarily changed by the printing or stamping thereon of words, letters, characters, figures, images or any combination thereof. Labels, patterns, photographs, playing cards, visiting cards, address tags, paper sacks, wrapping paper with printed advertisements thereon, bill heads, letter heads, envelopes, and other printed matter of the same general character, the printing upon which is not designed to instruct, amuse, cultivate the mind or taste, or impart general information, are mere articles of merchandise, and should be rated as fourth-class matter."

The Atchafalaya Bridge Opened.—The first train crossed the Atchafalaya Bridge on Dec. 26th, and trains are now passing over it regularly. Work was commenced on the bridge, which is situated 130 miles west of New Orleans, in September, 1881. Since June, 1883, a day and night forces have been constantly employed. The bridge is 1045 feet long, and consists of two fixed spans, each 253 feet long, one fixed span 163 feet long, a draw span 303 feet long, and 73 feet of trestle approaches. The spans are of iron, of the Pratt pattern, and the piers are wrought and cast iron cylinders filled with concrete. The foundations are in no instance less than 120 feet below high water, and are from 75 to 115 feet below ground. Serious delays in both freight and passenger traffic on the Texas Pacific will now be avoided.

The statistics of plans and costs for new buildings in New York filed during 1883 show a slight decrease from those for 1882. For the first three months of the year 690 plans were filed, representing proposed improvements the aggregate cost of which is placed at \$12,784,420; for the second quarter 914 plans were filed, representing \$14,159,464, and for the third quarter the number of plans filed was 664, which represents \$14,159,467. For the months of October and November plans representing about \$6,534,000 were filed. The total number of plans filed for all classes of buildings in 1882 was 2577, representing a total for new buildings of \$44,763,183.

The following erroneous item inadvertently found its way into our "Industrial Items" a week ago: "The Chancellor of Trenton, N. J., last week granted an interlocutory injunction restraining the New Jersey Zinc and Iron Company from further working the mining property in Sussex County, ownership of which is claimed by Charles W. Trotter and others. The case has been before the courts for several years, and the property involved is valued at several millions." The statement is the exact reverse of the truth. The injunction was in favor of the New Jersey Zinc and Iron Company, and against Mr. Trotter.

The advanced sheets of Superintendent Maxwell's annual report to the Cincinnati Chamber of Commerce show that the business in grain in Cincinnati has fallen off the past year. The aggregate receipts of all kinds of grain have fallen off 4,300,000 bushels, and the shipments have fallen off nearly as much. The reduction is mainly in wheat and corn.

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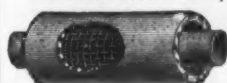
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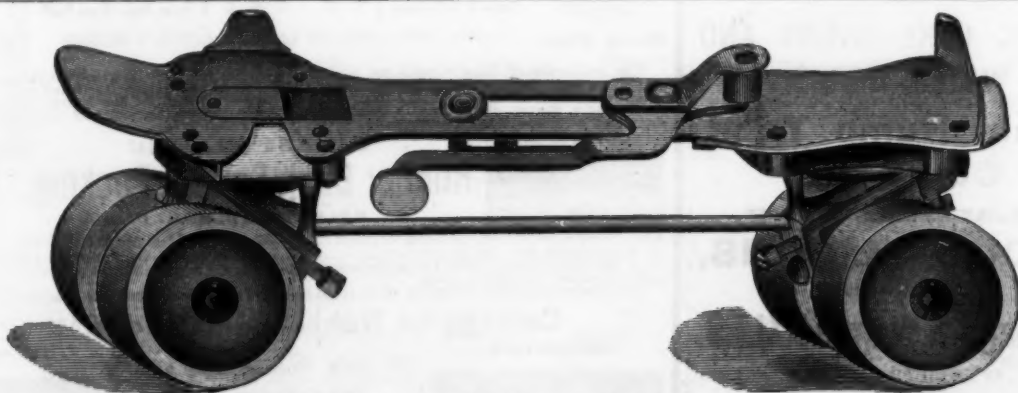
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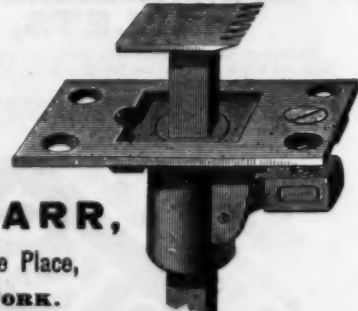
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New Calendars.

The present is the season in which calendars are put out by such houses as employ this means of advertising, and for keeping their names prominently before their customers. The annual crop of efforts of this character is very large. Among those that are conspicuous for their excellence may be mentioned one issued by Messrs. Bruce & Cook, Nos. 186 to 190 Water street, and 248 and 250 Pearl street, New York. The calendar in its general appearance is almost identical with that which this house has issued for several years past. The New Year's greeting which accompanies this calendar is as follows:

"HAPPY NEW YEAR."—1884.

DEAR SIR: We present ourselves and our calendar with best wishes for your welfare in the new year. Like our calendar, we would be the familiar face unchanged save in such adaptations to the new order of things as will fit us for greater usefulness in your service.

Our house is growing old. Founded in 1819 by the father of the present head of the firm, it was known as John M. Bruce. In 1840 this son was taken in, and the firm of John M. Bruce & Son was organized. In 1844 other sons came in, and John M. Bruce & Sons became the style. In 1850, the senior Bruce retired, and the firm became John M. Bruce's Sons until 1853, when the present firm of Bruce & Cook was organized. This record covers 65 years; but the present firm names on the calendar show that we may fairly claim to have old heads on young shoulders, and we hold them all to their efforts for the welfare of our customers.

The business of the year past has been peculiar, in that while crops have been good and every branch of demand for consumption active, the markets everywhere are oversupplied with material, and the keen competition occasioned thereby has steadily depressed prices; but few branches of production or distribution have been largely remunerative. In our own specialties we find that in

Sheet Iron—The mills are producing more than a supply for the normal requirements of the country, and the product steadily yields in price.

Copper.—The mines of the country produce more than we can consume, and the surplus hangs heavily on the market; manufactured copper holds its own better; this is owing, however, to the limited output of the mills, which make only what is consumed.

Lead.—Notwithstanding the enormous increase of the consumption of this metal, the production of the mines has more than met the demand, and the price has fallen steadily.

Spelter and Sheet Zinc.—In both these our own country produces all we need, and but for the drawback allowed the manufacturers using foreign material for export, it is not likely that lead, spelter or sheet zinc would be imported to any appreciable extent.

Tin Plates.—There is probably no product of the world's industry in which the introduction of scientific methods has wrought more beneficially than in this article; the "soft-steel" body and the splendid coating of a good tin plate of the present day give an article of superior utility to the old plate at a far less price. We find very few calling for the "old styles" who would be willing to pay the old price of \$8 or \$9 for I.C. and \$10-50 or \$11.50 for I.X. The fact is that the texture of a good steel plate of the present day is far better than the best of the old plates, and an equal amount of tin, laid evenly over the whole surface, is better than the "dip-candle" process of the old style. It is this heavy coating that costs, and cannot be had among the cheap things even now. We keep in stock the "extra-coated old process" for those who still prefer them, but our own faith hangs on the "extra-coated new process" for the most enduring service.

Prices throughout the year have been remarkably steady; the large consumption has not led to any advance, nor the increase in import materially cheapened the plate.

Pig Tin is also depressed, and the surplus stock has forced prices below any figures named since 1880.

Mixed Metals are correspondingly low in price; we manufacture these ourselves, and commend to you confidently our own brands of solder, Babbitt metal, &c., for reliable quality and substantial service.

We look upon the general condition of the trade as a healthy one; the process of liquidation and lower prices, without panic or general disturbance, is favorable, and the outlook for the new year exceptionally good. We expect a larger and more profitable business in 1884, and ask for a continuance of your kind patronage to enable us to realize it. We know we cannot prosper unless our customers do, and we look for our profit in the line of their success. We shall try to live up to these convictions, and in serving you faithfully make it to your interest as well as our own to come to us for your supplies. Yours truly, **BRUCE & COOK.**

New York, January 1, 1884.

Messrs. Merchant & Co., of 525 Arch street and 520 Cherry street, Philadelphia, and corner of Cliff and Beekman streets, New York, send us a calendar printed by Marcus Ward & Co., showing more that is typical and emblematical of the business in which this firm are engaged than is often successfully combined in an effort of this character. Much that is represented on the card, which measures 10 x 14 inches, corresponding to a common size of tin plate, is realistic in character, and yet the various parts have been so combined as to form a color effect that is quite artistic. The background of the picture is a light olive-green, against which is sharply contrasted a framework made up of representations of copper or brass tubing. The title, "Merchant & Co.," is worked across the top in grotesque block letters, which are so shaded as to appear in relief, and which, unlike letters in many such legends, are easily read. Hanging in the form of a shield suspended from either end of the same are the addresses above given in Philadelphia and New York. The background of this part of the picture inside of the tubing which serves as a frame is of a bluish cast, worked with scroll designs and fret panels, so as to break up the monotony of color, and con-

trasts happily with the various portions of the design which appear over it. The center of the card represents a forge scene. The smith stands before his anvil with his back to the observer. A helper stands facing him, with his sledge upraised, while an apprentice at the left stands holding the end of the bar being forged. In the center of the background the eye looks out of the shop on the fields and woodland beyond, while the ruddy glow of the forge fire at the right illumines the faces of the figures and contrasts pleasantly with the dark shadows of the roof and floor of the shop. Immediately below this shop view, and occupying about the same space as is devoted to it, a neat and unobtrusive calendar is printed, while at the right and left, grouped in a manner to effectively display the names printed upon them, and yet in a way in which the materials themselves could hardly be made to stand, are shown bundles of sheet brass and copper, and also drawn copper and brass tubing, sheet lead, boxes of tin plate, lead pipe and bundles of brass and wire. In the representation of all these items the artist has endeavored to give them their real colors, thus further enhancing the color effect of the design. A pig of tin and ingot of copper, together with a keg of solder or Babbitt metal, form an appropriate base to the general design which appears above them. Messrs. Merchant & Co. are to be congratulated upon the possession of one of the handsomest trade calendars of the year.

The French Merchant Marine.

The official statistics of the French Ministry of Commerce afford indisputable proof of the growth of the French mercantile marine, although numerically, comparing the number of vessels afloat now and at a former period, of all classes, there is an apparent decadence. The latter fact is explained by the partial disappearance of small sailing craft and the substitution of steamships of large capacity. It is shown that in the course of two years, 1877-78, the number of steamships increased from 500 to nearly 600, and that there are now 735, while the aggregate tonnage of this class has risen to about 312,000 tons, or about doubled. The concentration of tonnage at a few of the principal seaports is also noticeable, as Marseilles, Bordeaux and Havre control not far from one-half of the entire merchant navy of the country. The total registered tonnage is now 914,000 tons, against upward of 1,000,000 tons possessed by the country ten years ago. Calculating that one steamship will, within a given period, do the work of three sailing vessels of equal capacity, the decrease is apparent rather than real. In the face of the perhaps unexampled depression in ocean freights the world over, it now becomes important to ascertain whether all this tonnage can be profitably employed. May it not prove that, after all, the proud corporations now dispatching lines of first-class steamers to remote parts of the world are dependent, even for existence, on the liberal amounts disbursed in their behalf from the national treasury? Admitting that this may be so, it still remains to be seen whether the incidental benefits derived by the country at large from the extension of its foreign trade through rapid steamship communication do not far transcend in value all their cost. These are subjects which our Congress, now in session, has reason to gravely consider in their various bearings upon the present deplorable state of the American ocean marine.

The Tariff Question in Massachusetts.

The annual dinner of the Boston Merchants' Association occurred at Boston, January 3, at the Hotel Vendome, and was a notable event. There were present a large number of the "solid men of Boston," and representatives from nearly every branch of New England commerce. The discussion which followed the post-prandial exercises was confined mainly to the question of a national bankruptcy law and the tariff. The principal speech of the evening was made by Senator Hoar. He expressed himself as strongly in favor of a national bankruptcy act based upon the Lowell bill, and he was warmly applauded. Senator Aldrich, of Rhode Island, also ably discussed the same point in the same general manner. On the question of a bankruptcy law there was no opposition of opinion as to its desirability in the expressions of Congressmen Ranney, Morse, Collins and Russell; but Messrs. Ranney and Morse differed widely in regard to the possibility of its enactment. Mr. Ranney believes that it will become a party question, while Mr. Morse was equally certain that it will not be so treated. In regard to the tariff, Mr. Ranney and Mr. Russell were opposed to any change, but Messrs. Morse and Collins and J. W. Candler agreed that there should be an immediate reduction of duties if the manufacturers of New England are to be maintained. There seemed to be among those present a preponderance of feeling that some important changes should be made.

Our advices from Sheffield, the great center of the cutlery trade, are to the effect that business was very dull for the closing months of the year. The extreme dullness of the American demand, we are told, has much to do with the general quietude. Business with France is also dull. The threatened war with China is not only paralyzing business in France itself, but is also restricting trade with China and Eastern markets, while the political disquiet arising from this and other causes injuriously affects business in the Continental markets generally.

The statistics of the East River Bridge show that up to the close of November 4,250,000 foot passengers had paid \$42,500 to cross the bridge. During the same time the amount collected for vehicles crossing the bridge was \$42,158. The total number of passengers who traveled over the bridge in the cars from the opening of the railroad until the end of November was 1,082,300, and the amount collected for fares was \$54,115.

The Iron Age

AND
Metallurgical Review.

New York, Thursday, January 10, 1884.

DAVID WILLIAMS, Publisher and Proprietor.
JAMES C. BAYLES, Editor.
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Labor Legislation.

The present Congress appears to understand the need of more detailed information regarding the condition and prospects of labor in this country than has heretofore been available. Some admirable work has been done in gathering this information in several of the States, notably in Massachusetts, New Jersey, Pennsylvania and Ohio. That the work of the bureau of labor statistics in Indiana, Illinois, Missouri and Michigan has not become as well known as that of the States previously mentioned is due to the fact that they are of more recent organization. But the information gathered by these bureaus has, with very rare exceptions, related only to labor in the State making the report, and has in most cases at best been but fragmentary, even in its statements regarding the State labor. The only attempt made by the National Government on anything like a broad scale to collect statistics of wages and to gather information regarding labor is that of Mr. Joseph D. Weeks, as special agent of the Census Department, but this report, though it has been finished for several months, is not even in type yet, we believe, and consequently the information contained in it is not available.

The proposal to establish a national Bureau or Department of Labor Statistics we regard as of the utmost importance. So much of our legislation affects labor and its rewards, and consequently determines its condition, that it is of the greatest consequence that an attempt should be made to collect the information necessary to intelligent action, and without which any action can at the best be but a groping in the dark. Two years ago, when the tariff question was before Congress, and so many speakers on the subject claimed that it was at bottom a labor question, and that protective tariffs had sensibly affected the rewards of labor in this country, a demand was made on the Treasury Department for information bearing on this subject, and, to the utter surprise of a great many, it was found that no department of our Government was charged, either directly or indirectly, with the investigation of facts connected with this vital matter. There was a Bureau of Statistics in the Treasury Department, which should more properly be named a bureau of commercial statistics; there was a Department of Agriculture that investigated questions connected with this industry, but no one seemed to be charged to ascertain the

facts that affect in such an important degree the well-being and happiness of the great majority of our people. Not only are the welfare and happiness of the individual involved in these questions, but it is evident to every careful observer that some of the most vital questions connected with the peace and continued prosperity of our country as a political entity depend on the course of our legislation regarding labor or affecting labor, and it must seem the height of folly to a disinterested observer that important action on these subjects should be taken without the most thorough and reliable information upon which to base such action.

It is for these reasons that we favor the establishment of a Bureau of Labor Statistics that we may secure correct information on the topics suggested—information that will not only enable legislation to be undertaken intelligently, but will also, we believe, go far to disabuse the minds of the better and intelligent class of workmen of many of the false and erroneous views that now prevail among them.

The State of Trade in Great Britain.

The reasons for the present unsettled state of the English trade are complex. The depression of a few years back was mainly caused by the countries which produced the raw materials wishing to develop their own resources more rapidly than was consistent with healthy growth. To this end they borrowed from the rest of the world money which, on account of a succession of poor harvests, they were unable to refund. Consequently upon this failure to meet their liabilities was a reduction of their imports from the manufacturing countries. This so greatly reduced the demand for finished products that the markets rapidly became overstocked. The revival of trade commenced in 1879 and continued until 1881, but from that period up to the present date the depression has been steadily increasing. From all departments of English trade comes the same complaint—that profits, where not completely annihilated, have been so far reduced as hardly to warrant a continuance of work. The cotton mills have insisted upon a reduction of wages, as they must decrease their expenses or else be forced to close. The unprecedented activity in shipbuilding has also suffered a severe decline, while the iron and steel industries are in the same discouraging condition. Although some of the complaints are undoubtedly exaggerated, it must be admitted that profits have been greatly reduced in the last two years. Notwithstanding all these unpleasant facts, the amount of trade in England remains practically the same. The reports of the railway companies show that traffic has not perceptibly decreased, and, in fact, is as large as it has ever been. Speculation of every description has stopped, capitalists have become very cautious and refusing to invest in anything but the most trustworthy ventures.

The first explanation to account for this general disappointment is found in the number of successive bad harvests by which Europe has been afflicted. The great majority of labor, with the exception of that engaged in the metallurgical industries and a few other trades, is employed in raising or handling the products of the soil and making them suitable to the wants of man. An overproduction of these articles is something from which the world at large never suffers, while a very few years of poor harvests, resulting in a reduction of such produce, will immediately affect the whole industrial community. The great risk in all agricultural pursuits, of whatever description, lies in the fact that the amount of outlay in both time and money is continuous, year after year, while the recompense, which is entirely at the mercy of sun and rain, is subject to annual variation. The whole agricultural community, in the event of a bad harvest, not only cannot supply the dependent industries with the raw materials necessary for the carrying on of their work, but the farmers, having made no profit themselves, are not able to buy the manufactured products of the towns. Since the middle of the present century, England or the Continent has not been subject to such agricultural depression as in the last six or seven years. The agricultural classes in Europe greatly outnumber all the other producers taken together, and it is not surprising that when they suffer the whole population are likewise affected, and the loss to which each country is subjected necessarily hurts every other one proportionally. Besides a continuance of poor harvests, Europe has suffered from a prevalence of cattle disease, which, though of not so much moment, is still an important factor as affecting its commercial prosperity.

But though the state of the crops is everywhere conceded to be the chief cause for the present depression in English trade, it is by no means the only one. Protective tariffs, enforced as they are in the United States and on the Continent, undoubtedly have had a very unfavorable effect upon British manufactures; the result of this policy has been felt more particularly of late as one important State after another has raised its customs duties. The remarkable increase in the production of iron and steel in the United States has withdrawn this country from the number of those receiving their supplies from England. Not only has the United States become independent of the English supply, but also Russia and many other European countries are no longer forced to buy in English markets, their own produc-

tion meeting the demands of home consumption. Even some of the colonies of Great Britain which hitherto have allowed the introduction of goods free of duty are now trying the effect of a protective duty, which necessarily decreases the demand for English goods. The Weavers' Committee of Northeast Lancashire recently issued a circular calling attention to the duties imposed by the colonies upon English cotton manufactures, and pointed out how they would seriously affect the export trade of Great Britain.

Nor must the fact be ignored that the once proud pre-eminence of Great Britain in the markets of the non-manufacturing countries of the world is now being disturbed, greatly to her commercial disadvantage and pecuniary loss, by such rivals as Germany and Belgium. No longer do the railway requirements of Italy, Spain, Portugal and other humbler countries turn toward Great Britain as the only source of supply. Germany and Belgium take many contracts in spite of low British prices. German and French hosiery and woolen goods also compete favorably with British goods in neutral markets. A very striking example of how British trade supremacy has been lost is seen in the transfer of the American wire-rod trade from British to German hands. Only a few rods of a special quality are now made throughout Great Britain, rods being imported from Germany even for British home use. The past two or three years have witnessed great changes in this important direction.

While the above mentioned are the principal causes of the present stagnation in English trade, there are various others of a temporary nature, which nevertheless have a serious effect for the time being. Before the recent war in the East a considerable amount of English capital was invested in Egyptian securities. The military operations of England necessitated by the rebellion of Arabi produced the more or less disastrous results in trade which always accompany a war. Furthermore, the decline in Egyptian stocks seriously affected the English investors, causing considerable losses, which the present trouble in the Sudan will not tend to diminish. In consequence of these and other events, there has been a complete collapse of speculation throughout Europe, which means that it is next to impossible to obtain money for commercial enterprises, everybody looking with distrust upon new proposals. Trade is checked and capitalists are holding their capital in such a way that they can apply it at a moment's notice. As soon as this excessively conservative feeling passes away speculation will again become active. The state of trade, being dependent as it is in England and in other countries upon the harvests, will not, however, become materially better until the seasons are once more favorable.

Americans cannot help observing the almost identical condition of trade on both sides of the Atlantic. The depression here is not only severe, but general in its character, the few branches of business which for a long time preserved a distinctive vitality having gradually succumbed under the corrosive influence of excessive conservatism among consumers. There is this difference, however, between the situation in Great Britain and in America—there the outlook is gloomy and less hopeful than ever, while here confidence seems to be returning and the skies are brighter.

Our Foreign Metal Trade.

We have received from Hon. Joseph Nimmo, Jr., the October statement of the Bureau of Statistics, showing the imports and exports of metals for the month and ten months ended October 31. These monthly statements are much more valuable than they were formerly, owing to the greater detail in which the statistics are given. It will take several months, however, to get them in complete shape for comparison, as the details for last year are not always available. There is much satisfaction to be obtained, nevertheless, from the specific information now given concerning the leading items which figure in our imports of iron and steel. Iron ore, cotton-ties, wire rods, scrap steel and some other articles are now separately stated, and those interested in these lines of trade can ascertain from month to month how much is being imported. The same improvements have been made in the arrangement of the export tables.

We have endeavored to group the various details given in these tables, in order to make a comparison between 1883 and 1882, and have found that for this purpose it is only possible to take values, as quantities are fragmentary. The following table shows the imports of metals in the month and ten months ended October 31 of last year, as compared with the corresponding periods of 1882:

Articles.	October.		Ten months.	
	1882.	1883.	1882.	1883.
Brass.....	\$41,840	\$67,361	\$515,107	\$619,254
Copper.....	67,564	40,784	877,603	461,463
Iron and steel.....	4,079,898	4,993,092	48,427,350	59,467,044
Lead.....	7,577	8,707	74,802	176,027
Metal comp.....	361,909	358,702	1,687,406	1,721,938
Mineral substat.....	7,380	10,435	78,614	65,750
Tin.....	512,385	890,840	5,304,741	4,608,616
Zinc.....	8,399	97,966	843,109	1,001,745
Total.....	\$4,971,804	\$6,308,467	\$50,588,292	\$68,211,836

These values embrace ores as well as finished products. The totals show how trade has fallen off since the preceding year. Iron

and steel heavily preponderate, notwithstanding the great development of our domestic trade. Tin plates are included in iron and steel. The tin separately classed means crude or pig tin.

We have added the domestic and foreign exports together, so as to show the total volume of our export trade, which is given in the following table for the month and ten months ended October 31, 1883, as compared with the corresponding periods of 1882:

Articles.	October.		Ten months.	
	1883.	1882.	1883.	1882.
Brass.....	\$9,517	\$19,270	\$193,378	\$191,858
Copper.....	464,816	25,624	4,085,250	812,294
Iron and steel.....	2,221,935	2,434,720	19,813,115	19,068,148
Lead.....	8,756	10,324	88,007	64,530
Metal comp.....	297	745	35,069	90,582
Mineral substatn.....	100	100
Tin.....	1,428	20,494	56,179
Zinc.....	92	4,888	13,594	106,097
Total.	\$2,707,829	\$2,495,601	\$24,230,071	\$21,222,005

It will be seen that our exports of metals have increased in the latter period over the former, which is due almost entirely to the heavy increase in copper. The bulk of the metal export trade is, however, confined to iron and steel.

The Course of Tin Plates.

The decline which has recently taken place in the price of tin plates in this market begins to attract a good deal of attention among the metal trade; it may, therefore, be the proper moment for reviewing the situation. A year since coke tin commanded in New York \$5.37½ to \$5.50 per box, and it is now sold at \$4.95 to \$5. In Liverpool it was worth in the middle of December, 1882, 16/6 to 20/6, and at present does not bring over 16/. Shipments from England during the first eight months amounted to 181,454 tons, against 181,856 in 1882; this shows an export at the rate of 270,000 tons per annum this year, while last year the total export amounted to the same figure, against 239,300 in 1881. The United States imported during the first nine months of the current year 167,607 tons net, against last year during the corresponding period 164,590 tons. It thus appears that there has been great steadiness, as compared with 1882, both in the general English export and the American import. While this has been the case it is known that neither in our ports nor in the interior is there the least accumulation of stock tending to unfavorably weigh on the markets and depress the price. The situation on both sides of the Atlantic is acknowledged to have seldom been so sound, for it is well known that the output in Wales barely suffices to meet the current demand from all quarters, and that makers are booked ahead several months into the new year. Consumption in the United States for all sorts of tin plates has left nothing to be wished for. If there had been any serious disappointment under this head, there would be a glut of tin plates in this country somewhere, but such is not the case.

The alleged cause of the decline is that tin plates merely follow in the wake of block tin, which has been tending downward rapidly, and may go lower. Yet we have seen tin rule considerably lower, while tin plates sold 20 per cent. higher than they do now, and at a time when American tin-plate consumption had hardly begun to develop on such an extraordinary scale, nor Wales exported half as much as she does at present, for in 1876 the English export was only 132,564 tons. Rapid as the decline in block tin has been for a month or two past, it certainly seems to influence tin plates more than it should.

In order to show the amount of tin plates consumed in our export trade in canned eatables, &c., and therefrom form a judgment, at least approximately, as to what the domestic consumption may have been, we append a table exhibiting the movement:

Articles.	1882.	1883.
Blackening.....	\$160,570	\$141,162
Prepared cocoa, &c.....	71,043	76,729
Preserved fruit.....	2,258,787	4,311,539
Gunpowder.....	835,491	432,713
Paints.....	897,443	323,073
Beef.....	350,114	393,158
Condensed milk.....	2,873,553	3,059,873
Spirits of turpentine.....	151,512	138,147
Tallow.....	3,106,463	3,339,918
Varnish.....	160,617	162,777
Canned vegetables.....	139,082	135,688
Total.....	\$11,195,077	\$12,669,745

The above includes neither lard nor petroleum in tins—not to be ascertained; but, at any rate, it shows great steadiness, and the conclusion we may be permitted to draw from it is that the domestic demand for tin plates for canning purposes has been equally steady.

Speaking of the State canals, Governor Cleveland and Mr. Seymour, the State Engineer, are in direct conflict. The former in his recent message refers to their "good navigable condition," and the unprecedented amount of business done on them since the abolition of tolls, while the latter intimates very clearly that the canals have outlived their usefulness and "must go." The views expressed by Engineer Seymour excite great surprise among all those doing business on the canals, who consider them widely at variance with the facts. It is even suspected that the Engineer has been unduly biased by railroad influence, and his intimation favoring a Constitutional amendment allowing the canals to be sold to the highest bidder certainly favors this view of the case. So long as the canals serve to regulate the

prices of all commodities transported from the West to the seaboard they should be maintained.

Imports of Metals at New York in December.

The statistics of the imports of metals at New York for December have just been issued by the custom-house authorities. Secretary Shriver, of the Metal Exchange, has arranged them in convenient form and printed them in his daily report, from which we have compiled the following table, showing the imports of iron and steel at New York in the months of November and December just past, as well as the total imports in 1882 and 1883:

Articles.	Nov. 1883.	Dec. 1883.	Total 1883.	Total 1882.
Pig iron.....	16,369	9,943	129,082	242,408
Spiegeleisen.....	9,891	5,704	57,624	65,920
Old rails.....	1,332	944	6,004	39,516
Scrap iron.....	738	890	19,508	38,918
Scrap steel.....	150	417	17,813	15,917
Steel blooms.....	114	122	1,162	108,343
New steel rails.....	1,010	39	87,597	59,757
New iron rails.....	89	147	508	9,398
Steel-wire rods.....	8,096	2,820	84,329	79,053
Iron-wire rods.....	645	1,281	8,284	11,080
Swedish iron.....	1,612	1,917	23,356	23,970
Iron, bils. and bars.....	92	98	1,111	5,464
Iron beams.....	None	19	2,158	5,519
Hoop iron.....	2	4	1,976	3,892
Sheet iron.....	414	334	4,129	6,443
Russia sheet iron.....	346	none	1,335	1,392
Steel, bils. bars, &c.....	358	420	6,009	8,667
Steel tires and forgings.....	None	510	4,017	3,053
Iron tubes.....	131	None	282	759
Total.....	30,981	24,853	407,488	720,313
Tin plates.....	10,072	5,221	100,457	110,284
Grand total.....	40,453	30,074	516,975	830,597

It will be seen that in December, as compared with November, the imports fell off very considerably, even tin plates showing a heavy decrease. Spiegeleisen, iron-wire rods, Swedish iron and steel tires and forgings were the principal articles showing an increase, but more scrap iron, scrap steel, steel blooms, iron rails, iron (bundles and bars), beams and steel (bundles and bars) were received in December than in November. The imports of pig iron fell off heavily, and steel rails diminished to a bare 29 tons. The total for the year was very much under that of 1882, there being a decrease in every item except steel-wire rods, scrap steel and steel tires and forgings. The heaviest decrease was in steel blooms—from 108,203 tons in 1882 to 1162 tons in 1883.

The remarkably large quantity of steel which is now being imported in various forms will not escape attention. We have, in the following table, classed the iron and steel imports into three divisions to show the relative tonnage of each:

Articles.	Nov. 1883.	Dec. 1883.	Total 1883.	Total 1882.
Tin plates.....	10,072	5,221	100,457	110,284
Iron.....	35,613	20,475	366,451	454,633
Steel.....	4,768	4,978	151,007	275,680
Total.....	40,453	30,074	516,975	830,597

In the following table are shown the imports of iron ore and various metals, the units of quantity being in some cases tons, and in others pounds and casks:

Articles.	Nov. 1883.	Dec. 1883.	Total 1883.	Total 1882.
Iron ore.....	1,418	84,311	143,332	143,332
Slab and ingot tin.....	1,618	870	12,013	10,610
Copper (old).....	2,423	430	161,906	233,918
Brass (old).....	6,304	100	170,506	1,182,100
Pig lead.....	342,702	240,461	2,127,979	4,494,055
Lead (old).....	8,458	11,000	241,800	241,800
Spelter.....	217	859	3,844	11,178
Sheet zinc.....	50,735	12,128	1,738,312	6,814,342
Scrap zinc.....	282,500	282,500	688,000	688,000
Reg. antimony, cks.....	345	288	3,801	3,909
Nickel alloy.....	21,877	141,173	282,000	282,000

The Commercial Center.

The maritime commerce of the port of New York, as shown by the statistics of tonnage for 1883, steadily gains in importance. While there is no great difference in the total arrivals, compared with previous years, the number of steamship arrivals last year was nearly 2000, surpassing all precedents. At the same time, it is observed that in other classes of vessels there is generally a falling off. Contrary to what might have been expected, ships are an exception, the arrivals of this class having been 438, which is an increase of 31 sail, compared with 1882. Taking the last seven years together, the aggregate number of arrivals remains about stationary, showing that the ordinary sailing tonnage scarcely holds its own, despite the enormous expansion of our foreign trade, while the steamship fleet has nearly doubled. In the domestic coastwise trade, including arrivals from Eastern and Southern ports, while the number of steamers employed is about the same as one year ago, the total arrivals show a considerable decline, indicating the advantages gained by railroads over water transportation. At other Atlantic ports, including Philadelphia and Boston, the comparison with 1882 is much less favorable, their foreign traffic having materially declined. The Philadelphia Press says the total number of foreign arrivals during the year was less than in any twelvemonth since 1873, the gain in steamers being more than offset by the loss in ships and barks. All signs point to the future permanent concentration of the great bulk of foreign trade at the port of New York.

During the past year 500 vessels cleared from the port of New York laden with grain, but not a bushel was exported in an American vessel, and of fully \$4,000,000 paid in the shape of freight money, not a

dollar went to American shipowners. This is a lamentable showing, but if we had exported in 1883 over 100,000,000 bushels, as in the year before, or say double the amount actually exported, the exhibit would have been still more discreditable.

The Condition of Business.

The past week has been quiet. We hear of but few transactions, though inquiries seem to be abundant. But, unfortunately, inquiries do not always lead to business. In the midst of the prevailing dullness, however, there is a feeling of hopefulness and confidence among sellers that no lower prices will be realized than those which have already been made. In some directions an advance is even looked for. But consumers are generally indifferent about laying in stocks, and consequently there is very little ground on which to base opinions on the future course of business. In this connection, therefore, it may be well to quote the statements of some leading merchants and manufacturers in regard to the outlook for iron and steel.

A prominent pig-iron merchant says he believes prices are now at bottom, and that inside of six weeks it will be found that pig iron of good quality is actually scarce in this vicinity. He bases his belief on the fact that so many more furnaces are out of blast in the East than has been the case for years, while others are to be put out of blast, making the producing capacity, as he computes it, below the consumption. Whenever blast furnaces were blown out last year they almost invariably had stocks of pig iron on hand, which helped to supply the needs of consumers throughout the year. These furnaces are now not only out of blast, but their stocks have disappeared. Consequently, there is less of a supply to draw from, while consumption, according to the best authorities, continues to be very heavy.

A steel merchant whose customers are scattered through New England and New York states that he finds no indications of improving business among them, but, on the contrary, excessive competition has caused them to reduce their prices so ruinously that they appeal to him and other merchants to give them lower rates on their material, to enable them to secure cost, at least, for their products. He believes that more failures are inevitable in many branches of trade before production is sufficiently restricted.

A very prominent steel-rail manufacturer says that there never was a time at the first of January when so many rails were contracted for as now, in proportion to the capacity of the mills, of course omitting the rail mills which are idle.

An agent for a car-building company says that the car-builders are "hungry for orders," but contracts are scarce. One railroad company have given out orders for 800 freight cars, and it is rumored that another company have purchased 2000 freight cars, but work is by no means sufficiently abundant. The locomotive builders are also seeking for contracts, and orders for an aggregate of 200 locomotives are said to be in course of negotiation.

• The iron-rolling mills are resuming operations pretty generally, the holiday suspension having been put to practical account in making necessary repairs. Wages have been reduced wherever possible. It is reported that in many cases the mills have orders booked ahead for three and four weeks. Some mill owners are endeavoring to get better prices for their products, while others are naming lower figures. The consequence is that the manufactured-iron trade has an irregular appearance.

The manufacturers of mild steel are increasing their efforts to secure a wider field. Steel beams and channels are now offered at the same price as if made of iron. We believe this is the first time such an offer has been made. Soft steel in other forms is held at rates but little above the cost of good iron, and under the cost of the special irons, which have always commanded a high price on account of their excellent quality.

The Profits of Speculation.

The brief yet brilliant career of Mr. Villard, followed by his complete financial ruin, is one of those lessons which it is profitable to heed. It illustrates the vicissitudes of life in Wall street, where the prince of to-day may be the beggar of to-morrow. Mr. Villard was not as shrewd as some others in whose hands are entrusted the fortunes of their fellow-men, for he gave his personal guarantee for the keeping of his word. He would seem to have been more honest, however, for, when his great railroad enterprises went down, he did what he could to save his friends from the wreck. His example in this respect will not be followed to any great extent, we fear. As one of the most famous operators of the street puts it—one of that kind who can keep serenely aloof from personal entanglements, whatever may befall others about him—"I believe in running my business, and not letting it run me."

One of our contemporaries, which professes to speak conscientiously, attempts to point a moral, in that it "alone, of all the journals" in the city, has withheld its tribute from "the fallen railway gambler whose collapse" is a great moral lesson—a warning to all "men to avoid speculative enterprises, and an admonition to the rising generation of men that wealth, to be respected and made

"certain, must come through slow, honest, 'sturdy processes.' And again: 'His example has been vicious and demoralizing, because it has turned scores of men into 'the vortex of speculation, to be stranded as he is himself.'"

It is natural, perhaps, to throw stones at the prostrate lion. Had Mr. Villard succeeded, he would have been one of the greatest men in the country; not succeeding, he is rated as "a ruined gambler." That is just the difference between success and failure, except that the latter is often more to a man's credit than the former.

Foreign Iron Ores.

A correspondent writes to us for information, as follows:

Being remotely connected with the iron trade, I would esteem it an especial favor if you would give me some information. I desire to ascertain the manner of disposing of foreign ores in this country, why the term "unit" is employed, and if they are sold by the ton or otherwise. An answer to the above would greatly oblige.

INQUIRY.

As our correspondent evidently means foreign iron ores, our reply will relate to them. They are sold principally to the manufacturers of Bessemer pig iron, four or five Eastern Bessemer steel companies taking very much the largest part of the importations. Some foreign ores are used by Eastern foundry pig iron manufacturers. The manner of disposing of these ores is, we believe, not unlike any other commercial transactions. Some ores are sold after negotiations between importers and consumers, while others are sold by the foreign mining companies direct. The term "unit" refers to the contents of metallic iron. Thus, if a price of 10 cents a unit is quoted, it means \$5 a ton for an ore containing 50 per cent. of metallic iron, or \$6 a ton for a 60 per cent. ore. The ore is sold by the ton of 2240 pounds. All foreign iron ores, however, are not sold by the unit. Some of them are sold by the ton without reference to the unit, the high character of the company mining and selling them being a sufficient guarantee that they contain the average quantity of metallic iron commercially known to be found in them.

The Secretaryship of the Mining Engineers.

The resignation of the secretaryship of the American Institute of Mining Engineers by Dr. Thomas M. Drown, is a cause for sincere regret by the membership of that important society. His rare tact and judgment in all his official and personal relations with the membership, and his conscientious fidelity in the editing of the transactions, have contributed more than anything else to make the Institute strong and place it in the first rank as a scientific society. It is in no respect flattery to say that Dr. Drown was an ideal secretary, and that his place will be much harder to fill than if it were an original vacancy. His successor will find himself under the necessity of conforming to a standard demanding peculiar qualifications. Naturally, so important an office, affording large opportunities for an international scientific reputation, is being sought by several candidates. Dr. R. W. Raymond, who was appointed secretary by the council to serve from January 1 to the annual meeting, February 19, is a candidate for election as permanent secretary. Of his brilliant qualifications there can be no question. Mr. Charles Kirchoff, Jr., is also a candidate, and is deservedly accorded favorable consideration on the score of a charming personal character and varied scientific attainments. Mr. Willard P. Ward is a third candidate, and Prof. Frederick Prime a fourth. These gentlemen possess widely various qualifications, and the membership cannot fail to value the opportunity of selection offered by so excellent a list of candidates. Instead of indicating the existence of internal dissensions in the Institute, this multiplicity of strong candidates for its most important executive office may be held to show that its dignities and opportunities are fully appreciated, and that they are great enough to invite an amicable contest among gentlemen who are in no sense dependent upon such preferment for a career. We congratulate the membership that so many gentlemen of conspicuous fitness are willing to allow the use of their names as candidates. As the contest should, and will, be decided solely with reference to the best interests of the Institute, and not upon personal grounds, the unsuccessful candidates will be in no sense compromised by their candidacy.

Our article this week describing Mr. Fithian's engine and gear will be found interesting in many respects. Mr. Fithian's machinery, as now arranged, is exceedingly well adapted to the running of electric-light machinery, and from experiments which have been made within the past few weeks it is safe to say that it cannot but meet with a most favorable reception. The figures given for the power expended for running a certain number of arc lights were found surprisingly low, but careful revision of the calculations leaves no doubt as to their correctness.

The appropriations authorized for the support of government in New York City during the present year are 34,000,000, which is \$8,000,000 in excess of the amount levied for

State, county, city and town purposes in the entire commonwealth of Massachusetts. New York City being pre-eminently the seat of important manufactures, we here have a tax on industry hard to be borne. Comptroller Grant must push his investigations.

On the 3d inst. Mr. James B. Brinsmade died at his residence in Brooklyn, of syncope of the heart. Mr. Brinsmade was long and prominently identified with the iron trade of this city and State, and at the time of his death had entered upon his 60th year. His name begins the roll for 1884 of the departed in the iron trade. We hope to be able to present in a future issue a biographical sketch of Mr. Brinsmade, the material for which is not immediately available.

WASHINGTON NEWS.

January 3.—Representative Bland had an interview with Mr. Burchard, Director of the Mint, this morning, in regard to the number of trade dollars in circulation. The latter expressed the opinion that between 5,000,000 and 6,000,000 of the coin were out and in the hands of tradesmen and the people generally, instead of being in the possession of speculators. The remainder of the \$35,000,000 originally coined are thought to have been exported or remelted. Mr. Bland says it is questionable whether the Government, having issued the trade dollar with the stamp of the Government upon it, could not be required to take it for Government dues at its nominal value.

January 4.—In a communication to the Department of State, the Consul of the United States at Tenerife reports the completion of the submarine cable from Cadiz to that port.

A NEW TREATY WITH SPAIN ABOLISHING DISCRIMINATING DUTIES.

January 4.—The following statement with regard to the negotiation and execution of the new commercial agreement with Spain has been furnished by the State Department:

In pursuance of the instructions given to him by Secretary Frelinghuysen before his departure for his post, Mr. Foster, the United States Minister to Spain, has lately conducted a successful negotiation with the Spanish Government for the removal of the differential duties between Spanish colonies and the United States, and the *Official Gazette*, of Madrid, will publish to-morrow a text of an agreement signed on the 2d inst., by the President's authority, between Mr. Foster and the Spanish Minister of State, providing for the abolition of the discriminating duties which at present affect the commerce between the United States and Cuba and Porto Rico. It has been the Spanish policy in the colonies for many years to maintain a system of discriminating duties on imports to favor trade with the mother country, and Spanish vessels, whether in the home or foreign trade. This was accomplished by fixing four different tariffs of import duties. The first or lowest column applied only to goods brought from the Spanish Peninsula and the Balearic Islands to Cuba and Porto Rico under the Spanish flag; the second—about double the rate of the first—applied to the same goods when brought from Spain in a foreign vessel; the third—about treble the rate of the first—applied to goods brought from any foreign country under the Spanish flag, and the fourth or highest scale of duties was imposed on foreign goods brought in foreign vessels. This scheme, by which goods from the United States, when carried to Cuba or Porto Rico under our flag, paid duties averaging about 30 per cent. higher than if carried thither under the Spanish flag, operated as a serious discrimination against American vessels engaged in the Cuban trade. By an act of Congress of June 30, 1864 (Revised Statutes, Section 2502), a discriminating duty of 10 per cent., in addition to the duties imposed by law, is to be collected in the United States on all goods coming hither in foreign vessels, that this extra duty is not collectable when the goods shall come in vessels entitled by treaty or act of Congress to have their cargoes treated as though under the United States flag. The effect of this act was to impose a discrimination of 10 per cent. against merchandise brought from Spanish ports to the United States. The bulk of the Spanish trade of this country being with the colonies, the discrimination proved onerous upon the Spanish shipping of Cuba and Porto Rico, as more than three-fourths of the export trade of Cuba and Porto Rico is with the United States. Ignoring the fact that the American statute did precisely what the Cuban and Porto Rican tariffs already did, and favored imports under the native flag against imports under a foreign flag, the Spanish Government treated it as unfriendly legislation, and on March 12, 1867, adopted a measure of ostensible retaliation by issuing a decree, the fifth article of which reads thus:

Article 5. Goods coming from ports of the United States and carried under the Spanish flag shall pay, upon being imported into the Island of Cuba, the duties fixed in the tariff for the same goods under a foreign flag, until by a special convention with the Government of that Republic for the abrogation of its laws touching exports in Spanish vessels for the Antilles, or for the reduction of the duties which now bear upon the products of the Antilles in the aforesaid ports, the modification of the present order shall become proper.

It is to be noted that this decree contains an error of statement—the law of the United States to which reference is made being in relation to imports from the colonies, and not exports thither. By this decree all merchandise from the United States, whether carried in Spanish vessels or under any foreign flag, pays the duties of the fourth or highest column of the customs tariff of Cuba and Porto Rico. Foreign merchandise from any other country than the United States might enter those islands, if carried thither in Spanish vessels, on payment of the lower duties of the third column of the tariff, but against the products of the United States the discrimination, before only partial, was made total.

Since 1867 many efforts have been made to remove a state of things so injuriously affecting the bulk of the foreign trade of Cuba and Porto Rico. It was urged by Spain that there was, in fact, no discrimination against the United States flag; that the Spanish vessels trading with our ports were treated precisely as our vessels were, and that the 10 per cent. discrimination imposed by us should be removed. But this Government held that the discrimination in the colonies was positive and total against the trade of the United States, and declined to modify its legislation. By statutes in 1828, 1830 and 1832, Congress gave to the President power, whenever satisfied that no discriminating duties of tonnage or impost were imposed in any foreign country on the vessels or goods of the United States, to suspend any discriminating duties in the United States affecting the vessels or goods of such foreign country so long as perfect reciprocity should exist. This legislation is found in Section 4228 of the Revised Statutes. The President's power under it to effect a remedy and to remove, by agreement with a foreign State, any discrimination weighing on commerce therewith is ample. It had been thought to take advantage of that power by suspending the discriminating duty of 10 per cent., of which Spain has never ceased to complain, but hitherto the Spanish Government has been unwilling or unprepared to afford such concession as would, in fact, insure reciprocal exemption of American vessels in the Antilles from discrimination. It will only remain for the President to issue his proclamation under Section 4228 of the Revised Statutes, suspending the discriminating duties of tonnage and import imposed here against Spanish vessels and products, to establish entire reciprocity of intercourse with the colonies.

The agreement signed by Mr. Foster covers other points of difference heretofore discussed between the two countries. The first of these arose concerning the heavy import duty levied in Cuba on live fish taken at sea and brought into the island by foreign vessels. The duty imposed was practically prohibitory and nearly destroyed a lucrative industry pursued by the fishermen of Florida. The United States tariff imposes no duty on imported live fish, and consequently many appeals have been made to Spain to remove this duty on the grounds of equity and reciprocity. It is now removed by the agreement. There has also been for several years considerable discussion between the two Governments about the asserted right of Spanish consuls to charge, for verifying the manifest of a vessel bound for a Spanish port, a fee based upon the tonnage of the cargo, and not related to the clerical service rendered. This Government has always claimed that such a fee, so collected, was tantamount to an export duty on American goods, levied on the United States by the agents of a foreign power, and objection has been strenuously made to the exaction by a foreign Government outside of its jurisdiction of a duty which this Government cannot exact in view of the Constitutional prohibition of any export duty. Mr. Foster has succeeded in doing away with this obnoxious charge in respect of cargoes for Cuba and Porto Rico, and it is not probable that its collection on shipments to other Spanish ports will be persisted in now that the principle for which the United States contended has been recognized.

RETAILTORY TARIFF LEGISLATION.

January 7.—The sentiment is daily gaining strength among Western Representatives in favor of retaliatory legislation against those countries which exclude American pork, lard and other products on the ground that they are diseased or unhealthful. Representative Browne, of Indiana, to-day offered a bill which authorizes the President to prevent the importation into the United States of German and French wines, liquors and such other articles as he may see fit, until all restrictive or prohibitory laws and regulations by those countries affecting American cattle or swine, or the products of either, are revoked and repealed.

Representative Townsend, of Illinois, offered a resolution, which was adopted without objection, requesting the President to communicate all correspondence, reports and other information on the subject of the exclusion of American hog products by Germany and France. This information is asked as a basis for legislation, which nearly all Western Congressmen, without distinction of party, regard as necessary.

BILLS AFFECTING BUSINESS INTERESTS.

January 7.—Among the bills introduced in the House to-day were the following:

By Mr. Sumner, of California—To fix and establish the maximum rate of freight fares on the Union and Central Pacific railroads. It provides that after 60 days from the passage of this act it shall be unlawful for those companies to charge a greater sum than 70 per cent. of the lowest rates of freight or the lowest prices of carriage existing on December 3, 1883.

By Mr. Perkins, of Kansas—To place molasses and sugar on the free list.

By Mr. White, of Kentucky—To abolish the internal revenue tax on tobacco.

By Mr. Willis, of Kentucky—To extend the time for the payment of tax on distilled spirits now in warehouses.

By Mr. Buckner, of Missouri—To prevent undue contraction of paper circulation; to prohibit the issue of Treasury and bank notes of a less denomination than \$10.

By Mr. Dockery, of Missouri—To reduce the duty on wearing apparel made in whole or in part of wool; to reduce the duty on wool to be manufactured into wearing apparel.

(From Our Own Correspondent.)

WASHINGTON, D. C., Jan. 9, 1884.

A report has just been issued by the Department of Agriculture, showing the relation of agriculture to other industries. By way of showing the comparison of progress between an agricultural and a manufacturing State, the report refers to the development of the material resources of the States of Virginia and Pennsylvania:

AGRICULTURE WITHOUT MANUFACTURES.

"Three hundred years ago Virginia stood as to-day, a beautiful desert, with only

spontaneous crops growing upon her soil, deer and turkeys her only cattle, her waters simply a breeding place for fish, her lands without a market, her ores and coals lying worthless below the soil. Agriculture, manufactures and commerce were practically unknown. Naturally, agriculture comes first, but other industries must follow, or rural arts will pine and struggle through a dwarfed existence. Virginia has heretofore held too exclusively to the idea of the dignity and independence of agriculture. She has hitherto sought wealth in the soil, but is now finding it in the coal mine, the iron ores, the dense forests, the enduring waterfall, and a thousand sources of production which are in their utilization rounding into symmetry and giving volume and momentum to the grand whole of Virginia industry."

MANUFACTURES WITH AGRICULTURE.

"Pennsylvania had a later and slower settlement. She has no seasons, and is almost destitute of natural water-ways and great aqueous basins for food-fish supplies. But Pennsylvania acted upon the true theory of industrial development—that it should be various and symmetrical, furnishing lucrative employment for male and female, old and young, indoors and in the open air, unskilled and rough, as well as nicely adjusted to the peculiar tastes and finer aptitudes of those who are suffering for something to do."

A COMPARISON.

"More than half of the people of Virginia," says the report, "are farmers; only one in five of the Pennsylvanians are engaged in agriculture. In Virginia the competition is between one farmer and another in the sale of produce for which there is no near market, and the cheapening of products also cheapens the acres on which they are grown. So Virginia farm lands are valued at \$10.50 per acre, while those of Pennsylvania command \$40.30. So says the census of 1880. It also says that the average farm worker of Virginia produces crops worth \$180, while the Pennsylvania agriculturist gets \$431, because of the other four mouths seeking to be filled and competing for the supply. These are not isolated examples."

THE VALUE OF LANDS.

The report says: "To test the value of this hypothesis, let us divide the States and Territories of the United States into four classes, the first having less than 30 per cent. of the population engaged in agriculture; the second, with 30 to 50 per cent.; third, 50 to 70 per cent., and fourth, those having 70 per cent. and upward."

The following is the result showing the value of lands:

Classes.	States and Territories.	Value of lands per acre.	Per cent. of workers in agriculture.
First.....	15	\$38.65	18
Second.....	13	30.55	42
Third.....	18	13.53	56
Fourth.....	6	5.18	77

THE INCOME OF THE FARMER.

The report, with some elaboration, then shows, from the census of 1880, that the owners of land find a great advantage in the increase of the proportion of non-agricultural population.

Taking the same classes as above, the report shows:

Classes.	Value of agricultural products per capita.	Proportion of workers in agriculture.
First.....	\$457	18
Second.....	324	42
Third.....	261	56
Fourth.....	160	77

In other words, 1,000,000 farmers in a manufacturing State make nearly three times as much as 2,000,000 farmers in an agricultural State.

THE WAGES OF LABOR.

The returns of the Department of Agriculture, compared with the statistics of the census, show that in 1870 the average wages of farm labor in the manufacturing or first class of States was \$34, while in the fourth or agricultural class it was but \$15. During the panic the competition with farm labor, owing to the non-employment of mechanics, brought the price of farm labor down to a point almost equal to pauperism. In 1882, after the return of manufacturing activity, under the tariff then in operation, agricultural labor again rose in price, averaging nearly \$25 in States of the first and second classes, as above, \$19.50 in the third and \$13.20 in the fourth classes, showing conclusively the great benefits of a large non-agricultural or manufacturing class, and that the fostering of manufactures by home protection is a direct benefit instead of a disadvantage to the agricultural population. It will be well for Senator Beck, Editor Watterson, Speaker Carlisle, Chairman Morrison and Mr. Hewitt to read this report before going much further in their baseless theories.

A NEW FINANCIAL SCHEME.

Senator Sabin, Chairman of the National Republican Committee, comes forward with a new proposition on the financial question, and which some, on account of his relations to the Republican party organization, are inclined to regard as a foreshadowing of party policy. He favors funding the entire national debt in a 2 per cent. loan, and thinks that a loan for that amount could be placed. He does not believe in the extinction of the national debt. He also favors the new bond in place of 1 per cent. tax on circulation of national banks, which would then make an equivalent of 3 per cent. to the national banks on the bonds held as security on deposits. Senator Sabin says that he will press this measure, as he believes that a low-rate permanent security is what the country needs.

KANSAS COTTON.

The Representatives from that active, enterprising and growing State, give glowing accounts of the adaptability of its climate and soil to the raising of cotton. They speak of the Southern counties having produced a fine crop of the staple during the past year, and say that gins have been set up to work it.

The first ton of Mexican tin ever sent to this country was recently received. The metal, which is said to be bright, clear and apparently of good texture, came from Durango, in the northern part of which district is the famous iron mountain.

The Iron Age

AND
Metallurgical Review.

New York, Thursday, January 10, 1884.

DAVID WILLIAMS, Publisher and Proprietor.
JAMES C. BAYLES, Editor.
JOHN S. KING, Business Manager.

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Monthly Edition: \$2.30 a year.

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RATES OF ADVERTISING.

One square (12 lines, one inch), one insertion, \$2.50;
one month, \$7.50; three months, \$19.50; six months,
\$35.00; one year, \$60.00; payable in advance.

BRITISH AGENCY.

Office of THE IRONMONGER, 44 Cannon St., London.

DAVID WILLIAMS, Publisher,
83 Reade Street, New York.
PITTSBURGH: J. D. WEEKS, Manager and Associate Editor.
PHILADELPHIA: J. D. WEEKS, Manager and Associate Editor.
CHICAGO: J. K. HANES, Manager.
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Labor Legislation.

The present Congress appears to under-stand the need of more detailed information regarding the condition and prospects of labor in this country than has heretofore been available. Some admirable work has been done in gathering this information in several of the States, notably in Massachusetts, New Jersey, Pennsylvania and Ohio. That the work of the bureau of labor statistics in Indiana, Illinois, Missouri and Michigan has not become as well known as that of the States previously mentioned is due to the fact that they are of more recent organization. But the information gathered by these bureaus has, with very rare exceptions, related only to labor in the State making the report, and has in most cases at best been but fragmentary, even in its statements regarding the State labor. The only attempt made by the National Government on anything like a broad scale to collect statistics of wages and to gather information regarding labor is that of Mr. Joseph D. Weeks, as special agent of the Census Department, but this report, though it has been finished for several months, is not even in type yet, we believe, and consequently the information contained in it is not available.

The proposal to establish a national Bureau or Department of Labor Statistics we regard as of the utmost importance. So much of our legislation affects labor and its rewards, and consequently determines its condition, that it is of the greatest consequence that an attempt should be made to collect the information necessary to intelligent action, and without which any action can at the best be but a groping in the dark. Two years ago, when the tariff question was before Congress, and so many speakers on the subject claimed that it was at bottom a labor question, and that protective tariffs had sensibly affected the rewards of labor in this country, a demand was made on the Treasury Department for information bearing on this subject, and, to the utter surprise of a great many, it was found that no department of our Government was charged, either directly or indirectly, with the investigation of facts connected with this vital matter. There was a Bureau of Statistics in the Treasury Department, which should more properly be named a bureau of commercial statistics: there was a Department of Agriculture that investigated questions connected with this industry, but no one seemed to be charged to ascertain the

facts that affect in such an important degree the well-being and happiness of the great majority of our people. Not only are the welfare and happiness of the individual involved in these questions, but it is evident to every careful observer that some of the most vital questions connected with the peace and continued prosperity of our country as a political entity depend on the course of our legislation regarding labor or affecting labor, and it must seem the height of folly to a disinterested observer that important action on these subjects should be taken without the most thorough and reliable information upon which to base such action.

It is for these reasons that we favor the establishment of a Bureau of Labor Statistics that we may secure correct information on the topics suggested—information that will not only enable legislation to be undertaken intelligently, but will also, we believe, go far to disabuse the minds of the better and intelligent class of workmen of many of the false and erroneous views that now prevail among them.

The State of Trade in Great Britain.

The reasons for the present unsettled state of the English trade are complex. The depression of a few years back was mainly caused by the countries which produced the raw materials wishing to develop their own resources more rapidly than was consistent with healthy growth. To this end they borrowed from the rest of the world money which, on account of a succession of poor harvests, they were unable to refund. Consequent upon this failure to meet their liabilities was a reduction of their imports from the manufacturing countries. This so greatly reduced the demand for finished products that the markets rapidly became overstocked. The revival of trade commenced in 1879 and continued until 1881, but from that period up to the present date the depression has been steadily increasing. From all departments of English trade comes the same complaint—that profits, where not completely annihilated, have been so far reduced as hardly to warrant a continuance of work. The cotton mills have insisted upon a reduction of wages, as they must decrease their expenses or else be forced to close. The unprecedented activity in ship-building has also suffered a severe decline, while the iron and steel industries are in the same discouraging condition. Although some of the complaints are undoubtedly exaggerated, it must be admitted that profits have been greatly reduced in the last two years. Notwithstanding all these unpleasant facts, the amount of trade in England remains practically the same. The reports of the railway companies show that traffic has not perceptibly decreased, and, in fact, is as large as it has ever been. Speculation of every description has stopped, capitalists having become very cautious and refusing to invest in anything but the most trustworthy ventures.

The first explanation to account for this general disappointment is found in the number of successive bad harvests by which Europe has been afflicted. The great majority of labor, with the exception of that engaged in the metallurgical industries and a few other trades, is employed in raising or handling the products of the soil and making them suitable to the wants of man. An over-production of these articles is something from which the world at large never suffers, while a very few years of poor harvests, resulting in a reduction of such produce, will immediately affect the whole industrial community. The great risk in all agricultural pursuits, of whatever description, lies in the fact that the amount of outlay in both time and money is continuous, year after year, while the recompense, which is entirely at the mercy of sun and rain, is subject to annual variation. The whole agricultural community, in the event of a bad harvest, not only cannot supply the dependent industries with the raw materials necessary for the carrying on of their work, but the farmers, having made no profit themselves, are not able to buy the manufactured products of the towns. Since the middle of the present century, England or the Continent has not been subject to such agricultural depression as in the last six or seven years. The agricultural classes in Europe greatly outnumber all the other producers taken together, and it is not surprising that when they suffer the whole population are likewise affected, and the loss to which each country is subjected necessarily hurts every other one proportionally. Besides a continuance of poor harvests, Europe has suffered from a prevalence of cattle disease, which, though of not so much moment, is still an important factor as affecting its commercial prosperity.

But though the state of the crops is everywhere conceded to be the chief cause for the present depression in English trade, it is by no means the only one. Protective tariffs, enforced as they are in the United States and on the Continent, undoubtedly have had a very unfavorable effect upon British manufactures; the result of this policy has been felt more particularly of late as one important State after another has raised its customs duties. The remarkable increase in the production of iron and steel in the United States has withdrawn this country from the number of those receiving their supplies from England. Not only has the United States become independent of the English supply, but also Russia and many other European countries are no longer forced to buy in English markets, their own produc-

tion meeting the demands of home consumption. Even some of the colonies of Great Britain which hitherto have allowed the introduction of goods free of duty are now trying the effect of a protective duty, which necessarily decreases the demand for English goods. The Weavers' Committee of Northeast Lancashire recently issued a circular calling attention to the duties imposed by the colonies upon English cotton manufactures, and pointed out how they would seriously affect the export trade of Great Britain.

Nor must the fact be ignored that the once proud pre-eminence of Great Britain in the markets of the non-manufacturing countries of the world is now being disturbed, greatly to her commercial disadvantage and pecuniary loss, by such rivals as Germany and Belgium. No longer do the railway requirements of Italy, Spain, Portugal and other humbler countries turn toward Great Britain as the only source of supply. Germany and Belgium take many contracts in spite of low British prices. German and French hosiery and woolen goods also compete favorably with British goods in neutral markets. A very striking example of how British trade supremacy has been lost is seen in the transfer of the American wire-rod trade from British to German hands. Only a few rods of a special quality are now made throughout Great Britain, rods being imported from Germany even for British home use. The past two or three years have witnessed great changes in this important direction.

While the above mentioned are the principal causes of the present stagnation in English trade, there are various others of a temporary nature, which nevertheless have a serious effect for the time being. Before the recent war in the East a considerable amount of English capital was invested in Egyptian securities. The military operations of England necessitated by the rebellion of Arabi produced the more or less disastrous results in trade which always accompany a war. Furthermore, the decline in Egyptian stocks seriously affected the English investors, causing considerable losses, which the present trouble in the Sudan will not tend to diminish. In consequence of these and other events, there has been a complete collapse of speculation throughout Europe, which means that it is next to impossible to obtain money for commercial enterprises, everybody looking with distrust upon new proposals. Trade is checked and capitalists are holding their capital in such a way that they can apply it at a moment's notice. As soon as this excessively conservative feeling passes away speculation will again become active. The state of trade, being dependent as it is in England and in other countries upon the harvests, will not, however, become materially better until the seasons are once more favorable.

Americans cannot help observing the almost identical condition of trade on both sides of the Atlantic. The depression here is not only severe, but general in its character, the few branches of business which for a long time preserved a distinctive vitality having gradually succumbed under the corrosive influence of excessive conservatism among consumers. There is this difference, however, between the situation in Great Britain and in America—there the outlook is gloomy and less hopeful than ever, while here confidence seems to be returning and the skies are brighter.

Our Foreign Metal Trade.

We have received from Hon. Joseph Nimmo, Jr., the October statement of the Bureau of Statistics, showing the imports and exports of metals for the month and ten months ended October 31. These monthly statements are much more valuable than they were formerly, owing to the greater detail in which the statistics are given. It will take several months, however, to get them in complete shape for comparison, as the details for last year are not always available. There is much satisfaction to be obtained, nevertheless, from the specific information now given concerning the leading items which figure in our imports of iron and steel. Iron ore, cotton-ties, wire rods, scrap steel and some other articles are now separately stated, and those interested in these lines of trade can ascertain from month to month how much is being imported. The same improvements have been made in the arrangement of the export tables.

We have endeavored to group the various details given in these tables, in order to make a comparison between 1883 and 1882, and have found that for this purpose it is only possible to take values, as quantities are fragmentary. The following table shows the imports of metals in the month and ten months ended October 31 of last year, as compared with the corresponding periods of 1882:

Articles.	October.	Ten months.
Brass.....	1883. 1882.	1883. 1882.
Copper.....	\$11,549 \$97,851	\$15,107 \$619,254
Iron and steel.....	67,364 40,784	\$77,003 451,402
Lead.....	4,079,898 4,925,028	45,457,350 59,467,044
Metal comp.....	7,577 8,787	74,303 176,027
Mineral substatn.....	951,302 225,739	1,687,456 1,721,938
Tin.....	7,390 10,425	75,614 65,750
Zinc.....	512,325 590,340	5,304,741 4,505,615
Total.....	3,390 97,990	545,109 1,901,745

These values embrace ores as well as finished products. The totals show how trade has fallen off since the preceding year. Iron

and steel heavily preponderate, notwithstanding the great development of our domestic trade. Tin plates are included in iron and steel. The tin separately classed means crude or pig tin.

We have added the domestic and foreign exports together, so as to show the total volume of our export trade, which is given in the following table for the month and ten months ended October 31, 1883, as compared with the corresponding periods of 1882:

Articles.	October.	Ten months.
Brass.....	1883. 1882.	1883. 1882.
Copper.....	\$9,517 \$19,370	\$193,378 \$191,858
Iron and steel.....	464,816 35,621	4,085,250 812,294
Lead.....	2,921,935 2,434,750	19,813,115 19,098,145
Metal comp.....	8,756 10,524	58,007 64,850
Mineral substatn.....	207 745	85,063 80,582
Tin.....	1,426 100	20,464 56,179
Zinc.....	922 4,888	12,894 108,067
Total.....	\$2,707,520 \$2,495,501	\$31,230,071 \$21,322,005

It will be seen that our exports of metals have increased in the latter period over the former, which is due almost entirely to the heavy increase in copper. The bulk of the metal export trade is, however, confined to iron and steel.

The Course of Tin Plates.

The decline which has recently taken place in the price of tin plates in this market begins to attract a good deal of attention among the metal trade; it may, therefore, be the proper moment for reviewing the situation. A year since coke tin commanded in New York \$5.37½ to \$5.50 per box, and it is now sold at \$4.95 to \$5. In Liverpool it was worth in the middle of December, 1882, 16/6 to 20/6, and at present does not bring over 16/. Shipments from England during the first eight months amounted to 181,454 tons, against 181,856 in 1882; this shows an export at the rate of 270,000 tons per annum this year, while last year the total export amounted to the same figure, against 239,300 in 1881. The United States imported during the first nine months of the current year 167,607 tons net, against last year during the corresponding period 164,590 tons. It thus appears that there has been great steadiness, as compared with 1882, both in the general English export and the American import. While this has been the case it is known that neither in our ports nor in the interior is there the least accumulation of stock tending to unfavorably weigh on the markets and depress the price. The situation on both sides of the Atlantic is acknowledged to have seldom been so sound, for it is well known that the output in Wales barely suffices to meet the current demand from all quarters, and that makers are booked ahead several months into the new year. Consumption in the United States for all sorts of tin plates has left nothing to be wished for. If there had been any serious disappointment under this head, there would be a glut of tin plates in this country somewhere, but such is not the case.

The alleged cause of the decline is that tin plates merely follow in the wake of block tin, which has been tending downward rapidly, and may go lower. Yet we have seen tin rule considerably lower, while tin plates sold 20 per cent. higher than they do now, and at a time when American tin-plate consumption had hardly begun to develop on such an extraordinary scale, nor Wales exported half as much as she does at present, for in 1876 the English export was only 132,564 tons. Rapid as the decline in block tin has been for a month or two past, it certainly seems to influence tin plates more than it should.

In order to show the amount of tin plates consumed in our export trade in canned eatables, &c., and therefrom form a judgment, at least approximately, as to what the domestic consumption may have been, we append a table exhibiting the movement:

Articles.	1883.	1882.
Blackening.....	\$162,572	\$141,162
Prepared cocoa, &c.....	71,043	70,739
Preserved fish.....	3,308,787	4,311,539
Preserved fruit.....	835,481	422,718
Gunpowder.....	367,442	328,073
Paints.....	325,114	325,158
Condensed milk.....	2,572,552	3,059,875
Spirits of turpentine.....	151,513	129,147
Tinware.....	3,100,465	3,303,918
Varnish.....	160,617	162,777
Canned vegetables.....	129,082	135,628
Total.....	\$11,195,677	\$12,629,745

The above includes neither lard nor petroleum in tins—not to be ascertained; but, at any rate, it shows great steadiness, and the conclusion we may be permitted to draw from it is that the domestic demand for tin plates for canning purposes has been equally steady.

Speaking of the State canals, Governor Cleveland and Mr. Seymour, the State Engineer, are in direct conflict. The former in his recent message refers to their "good navigable condition," and the unprecedented amount of business done on them since the abolition of toll, while the latter intimates very clearly that the canals have outlived their usefulness and "must go." The views expressed by Engineer Seymour excite great surprise among all those doing business on the canals, who consider them widely at variance with the facts. It is even suspected that the Engineer has been unduly biased by railroad influence, and his intimation favoring a Constitutional amendment allowing the canals to be sold to the highest bidder certainly favors this view of the case. So long as the canals serve to regulate the

prices of all commodities transported from the West to the seaboard they should be maintained.

Imports of Metals at New York in December.

The statistics of the imports of metals at New York for December have just been issued by the custom-house authorities. Secretary Shriver, of the Metal Exchange, has arranged them in convenient form and printed them in his daily report, from which we have compiled the following table, showing the imports of iron and steel at New York in the months of November and December just past, as well as the total imports in 1882 and 1883:

Articles.	Nov. 1883.	Dec. 1883.	Total 1883.	Total 1882.
Pig iron.....	16,296	9,943	129,082	242,406
Spiegeleisen.....	3,891	5,504	57,024	65,550
Old rails.....	1,332	344	6,004	39,516
Scrap iron.....	753	550	19,506	38,918
Scrap steel.....	150	417	17,518	15,917
Steel blooms.....	114	122	1,163	108,303
New steel rails.....	1,010	39	37,597	58,787
New iron rods.....	99	147	598	9,392
Steel-wire rods.....	3,096	2,850	84,329	70,553
Iron-wire rods.....	645	1,281	8,284	11,080
Swedish iron.....	1,612	1,917	28,356	32,970
Iron, bds. and bars.....	92	99	1,111	5,464
Iron beams.....	None	18	3,158	5,519
Hoop iron.....	2	4	1,976	3,392
Sheet iron.....	414	334	4,139	6,843
Russia sheet iron.....	346	none	1,339	1,592
Steel, bds., bars, &c.....	398	430	6,009	8,667
Steel tires and forgings.....	None	510	4,017	3,083
Iron tubes.....	131	None	222	750
Total.....	30,381	24,853	407,468	729,313
Tin plates.....	10,072	5,221	109,487	110,284
Grand total.....	40,453	30,074	516,955	839,597

It will be seen that in December, as compared with November, the imports fell off very considerably, even tin plates showing a heavy decrease. Spiegeleisen, iron-wire rods, Swedish iron and steel tires and forgings were the principal articles showing an increase, but more scrap iron, scrap steel, steel blooms, iron rails, iron (bundles and bars), beams and steel (bundles and bars) were received in December than in November. The imports of pig iron fell off heavily, and steel rails diminished to a bare 29 tons. The total for the year was very much under that of 1882, there being a decrease in every item except steel-wire rods, scrap steel and steel tires and forgings. The heaviest decrease was in steel blooms—from 108,303 tons in 1882 to 1162 tons in 1883.

The remarkably large quantity of steel which is now being imported in various forms will not escape attention. We have, in the following table, classed the iron and steel imports into three divisions to show the relative tonnage of each:

Articles.	Nov. 1883.	Dec. 1883.	Total 1883.	Total 1882.
Tin plates.....	10,072	5,221	109,487	110,284
Iron.....	25,618	20,475	256,451	454,233
Steel.....	4,762	4,378	131,067	245,080
Total.....	40,453	30,074	516,955	839,597

In the following table are shown the imports of iron ore and various metals, the units of quantity being in some cases tons, and in others pounds and casks:

Articles.	Nov. 1883.	Dec. 1883.	Total 1883.	Total 1882.
Iron ore.....	1,146	1,146	\$4,511	145,638
Slab and ingot tin, tons.....	1,619	376	12,013	10,610
Copper (old).....	2,428	489	161,906	323,918
Brass (old).....	6,304	1,000	170,506	1,182,106
Pig lead.....	342,708	240,461	2,127,979	4,454,035
Lead (old).....	3,458	11,000	241,800	241,800
Spelter.....	217	329	3,544	11,178
Sheet zinc.....	50,732	12,138	1,738,312	6,184,942
Scrap zinc.....	1,000	1,000	582,500	688,000
Res. antimony, cks.....	343	228	3,501	3,509
Nickel alloy.....	21,877	1,178	141,178	222,009

The Commercial Center.

The maritime commerce of the port of New York, as shown by the statistics of tonnage for 1883, steadily gains in importance. While there is no great difference in the total arrivals, compared with previous years, the number of steamship arrivals last year was nearly 2000, surpassing all precedents. At the same time, it is observed that in other classes of vessels there is generally a falling off. Contrary to what might have been expected, ships are an exception, the arrivals of this class having been 438, which is an increase of 31 sail, compared with 1882. Taking the last seven years together, the aggregate number of arrivals remains about stationary, showing that the ordinary sailing tonnage scarcely holds its own, despite the enormous expansion of our foreign trade, while the steamship fleet has nearly doubled. In the domestic coastwise trade, including arrivals from Eastern and Southern ports, while the number of steamers employed is about the same as one year ago, the total arrivals show a considerable decline, indicating the advantages gained by railroads over water transportation. At other Atlantic ports, including Philadelphia and Boston, the comparison with 1882 is much less favorable, their foreign traffic having materially declined. The Philadelphia Press says the total number of foreign arrivals during the year was less than in any twelvemonth since 1873, the gain in steamers being more than offset by the loss in ships and barks. All signs point to the future permanent concentration of the great bulk of foreign trade at the port of New York.

During the past year 500 vessels cleared from the port of New York laden with grain, but not a bushel was exported in an American vessel, and of fully \$4,000,000 paid in the shape of freight money, not a

dollar went to American shipowners. This is a lamentable showing, but if we had exported in 1883 over 100,000,000 bushels, as in the year before, or say double the amount actually exported, the exhibit would have been still more discreditable.

The Condition of Business.

The past week has been quiet. We hear of but few transactions, though inquiries seem to be abundant. But, unfortunately, inquiries do not always lead to business. In the midst of the prevailing dullness, however, there is a feeling of hopefulness and confidence among sellers that no lower prices will be realized than those which have already been made. In some directions an advance is even looked for. But consumers are generally indifferent about laying in stocks, and consequently there is very little ground on which to base opinions on the future course of business. In this connection, therefore, it may be well to quote the statements of some leading merchants and manufacturers in regard to the outlook for iron and steel.

A prominent pig-iron merchant says he believes prices are now at bottom, and that inside of six weeks it will be found that pig iron of good quality is actually scarce in this vicinity. He bases his belief on the fact that so many more furnaces are out of blast in the East than has been the case for years, while others are to be put out of blast, making the producing capacity, as he computes it, below the consumption. Whenever blast furnaces were blown out last year they almost invariably had stocks of pig iron on hand, which helped to supply the needs of consumers throughout the year. These furnaces are now not only out of blast, but their stocks have disappeared. Consequently, there is less of a supply to draw from, while consumption, according to the best authorities, continues to be very heavy.

A steel merchant whose customers are scattered through New England and New York states that he finds no indications of improving business among them, but, on the contrary, excessive competition has caused them to reduce their prices so ruinously that they appeal to him and other merchants to give them lower rates on their material, to enable them to secure cost, at least, for their products. He believes that more failures are inevitable in many branches of trade before production is sufficiently restricted.

A very prominent steel-rail manufacturer says that there never was a time at the first of January when so many rails were contracted for as now, in proportion to the capacity of the mills, of course omitting the rail mills which are idle.

An agent for a car-building company says that the car-builders are "hungry for orders," but contracts are scarce. One railroad company have given out orders for 800 freight cars, and it is rumored that another company have purchased 2000 freight cars, but work is by no means sufficiently abundant. The locomotive builders are also seeking for contracts, and orders for an aggregate of 200 locomotives are said to be in course of negotiation.

The iron-rolling mills are resuming operations pretty generally, the holiday suspension having been put to practical account in making necessary repairs. Wages have been reduced wherever possible. It is reported that in many cases the mills have orders booked ahead for three and four weeks. Some mill owners are endeavoring to get better prices for their products, while others are naming lower figures. The consequence is that the manufactured-iron trade has an irregular appearance.

The manufacturers of mild steel are increasing their efforts to secure a wider field. Steel beams and channels are now offered at the same price as if made of iron. We believe this is the first time such an offer has been made. Soft steel in other forms is held at rates but little above the cost of good iron, and under the cost of the special irons, which have always commanded a high price on account of their excellent quality.

The Profits of Speculation.

The brief yet brilliant career of Mr. Villard, followed by his complete financial ruin, is one of those lessons which it is profitable to heed. It illustrates the vicissitudes of life in Wall street, where the prince of to-day may be the beggar of to-morrow. Mr. Villard was not as shrewd as some others in whose hands are entrusted the fortunes of their fellow-men, for he gave his personal guarantee for the keeping of his word. He would seem to have been more honest, however, for, when his great railroad enterprises went down, he did what he could to save his friends from the wreck. His example in this respect will not be followed to any great extent, we fear. As one of the most famous operators of the street puts it—one of that kind who can keep serenely aloof from personal entanglements, whatever may befall others about him—"I believe in running my business, and not letting it run me."

One of our contemporaries, which professes to speak conscientiously, attempts to point a moral, in that it "alone, of all the journals" in the city, has withheld its tribute from "the fallen railway gambler whose collapse" is a great moral lesson—a warning to all "men to avoid speculative enterprises, and" an admonition to the rising generation of "men that wealth, to be respected and made

"certain, must come through slow, honest, 'sturdy processes.' And again: 'His example has been vicious and demoralizing, because it has turned scores of men into 'the vortex of speculation, to be stranded 'as he is himself.'"

It is natural, perhaps, to throw stones at the prostrate lion. Had Mr. Villard succeeded, he would have been one of the greatest men in the country; not succeeding, he is rated as "a ruined gambler." That is just the difference between success and failure, except that the latter is often more to a man's credit than the former.

Foreign Iron Ores.

A correspondent writes to us for information, as follows:

Being remotely connected with the iron trade, I would esteem it an especial favor if you would give me some information. I desire to ascertain the manner of disposing of foreign ores in this country, why the term "unit" is employed, and if they are sold by the ton or otherwise. An answer to the above would greatly oblige.

INQUIRE.

As our correspondent evidently means foreign iron ores, our reply will relate to them. They are sold principally to the manufacturers of Bessemer pig iron, four or five Eastern Bessemer steel companies taking very much the largest part of the importations. Some foreign ores are used by Eastern foundry pig iron manufacturers. The manner of disposing of these ores is, we believe, not unlike any other commercial transactions. Some ores are sold after negotiations between importers and consumers, while others are sold by the foreign mining companies direct. The term "unit" refers to the contents of metallic iron. Thus, if a price of 10 cents a unit is quoted, it means \$5 a ton for an ore containing 50 per cent. of metallic iron, or \$6 a ton for a 60 per cent. ore. The ore is sold by the ton of 2240 pounds. All foreign iron ores, however, are not sold by the unit. Some of them are sold by the ton without reference to the unit, the high character of the company mining and selling them being a sufficient guarantee that they contain the average quantity of metallic iron commercially known to be found in them.

The Secretaryship of the Mining Engineers.

The resignation of the secretaryship of the American Institute of Mining Engineers by Dr. Thomas M. Drown, is a cause for sincere regret by the membership of that important society. His rare tact and judgment in all his official and personal relations with the membership, and his conscientious fidelity in the editing of the transactions, have contributed more than anything else to make the Institute strong and place it in the first rank as a scientific society. It is in no respect flattery to say that Dr. Drown was an ideal secretary, and that his place will be much harder to fill than if it were an original vacancy. His successor will find himself under the necessity of conforming to a standard demanding peculiar qualifications. Naturally, so important an office, affording large opportunities for an international scientific reputation, is being sought by several candidates. Dr. R. W. Raymond, who was appointed secretary by the council to serve from January 1 to the annual meeting, February 19, is a candidate for election as permanent secretary. Of his brilliant qualifications there can be no question. Mr. Charles Kirchoff, Jr., is also a candidate, and is deservedly accorded favorable consideration on the score of a charming personal character and varied scientific attainments. Mr. Willard P. Ward is a third candidate, and Prof. Frederick Prime a fourth. These gentlemen possess widely various qualifications, and the membership cannot fail to value the opportunity of selection offered by so excellent a list of candidates. Instead of indicating the existence of internal dissensions in the Institute, this multiplicity of strong candidates for its most important executive office may be held to show that its dignities and opportunities are fully appreciated, and that they are great enough to invite an amicable contest among gentlemen who are in no sense dependent upon such preferment for a career. We congratulate the membership that so many gentlemen of conspicuous fitness are willing to allow the use of their names as candidates. As the contest should, and will, be decided solely with reference to the best interests of the Institute, and not upon personal grounds, the unsuccessful candidates will be in no sense compromised by their candidacy.

Our article this week describing Mr. Fithian's engine and gear will be found interesting in many respects. Mr. Fithian's machinery, as now arranged, is exceedingly well adapted to the running of electric-light machinery, and from experiments which have been made within the past few weeks it is safe to say that it cannot but meet with a most favorable reception. The figures given for the power expended for running a certain number of arc lights were found surprisingly low, but careful revision of the calculations leaves no doubt as to their correctness.

The appropriations authorized for the support of government in New York City during the present year are 34,000,000, which is \$8,000,000 in excess of the amount levied for

State, county, city and town purposes in the entire commonwealth of Massachusetts. New York City being pre-eminently the seat of important manufactures, we here have a tax on industry hard to be borne. Comptroller Grant must push his investigations.

On the 3d inst. Mr. James B. Brinsmade died at his residence in Brooklyn, of syncope of the heart. Mr. Brinsmade was long and prominently identified with the iron trade of this city and State, and at the time of his death had entered upon his 60th year. His name begins the roll for 1884 of the departed in the iron trade. We hope to be able to present in a future issue a biographical sketch of Mr. Brinsmade, the material for which is not immediately available.

WASHINGTON NEWS.

January 3.—Representative Bland had an interview with Mr. Burchard, Director of the Mint, this morning, in regard to the number of trade dollars in circulation. The latter expressed the opinion that between 5,000,000 and 6,000,000 of the coin were out and in the hands of traders and the people generally, instead of being in the possession of speculators. The remainder of the \$35,000,000 originally coined are thought to have been exported or remelted. Mr. Bland says it is questionable whether the Government, having issued the trade dollar with the stamp of the Government upon it, could not be required to take it for Government dues at its nominal value.

January 4.—In a communication to the Department of State, the Consul of the United States at Tenerife reports the completion of the submarine cable from Cadiz to that port.

A NEW TREATY WITH SPAIN ABOLISHING DISCRIMINATING DUTIES.

January 4.—The following statement with regard to the negotiation and execution of the new commercial agreement with Spain has been furnished by the State Department:

In pursuance of the instructions given to him by Secretary Frelinghuysen before his departure for his post, Mr. Foster, the United States Minister to Spain, has lately conducted a successful negotiation with the Spanish Government for the removal of the differential duties between Spanish colonies and the United States, and the *Official Gazette*, of Madrid, will publish to-morrow a text of an agreement signed on the 2d inst., by the President's authority, between Mr. Foster and the Spanish Minister of State, providing for the abolition of the discriminating duties which at present affect the commerce between the United States and Cuba and Porto Rico. It has been the Spanish policy in the colonies for many years to maintain a system of discriminating duties on imports to favor trade with the mother country, and Spanish vessels, whether in the home or foreign trade. This was accomplished by fixing four different tariffs of import duties. The first or lowest column applied only to goods brought from the Spanish Peninsula and the Balearic Islands to Cuba and Porto Rico under the Spanish flag; the second—about double the rate of the first—applied to the same goods when brought from Spain in a foreign vessel; the third—about treble the rate of the first—applied to goods brought from any foreign country under the Spanish flag, and the fourth or highest scale of duties was imposed on foreign goods brought in foreign vessels. This scheme, by which goods from the United States, when carried to Cuba or Porto Rico under our flag, paid duties averaging about 30 per cent. higher than if carried thither under the Spanish flag, operated as a serious discrimination against American vessels engaged in the Cuban trade. By an act of Congress of June 30, 1864 (Revised Statutes, Section 2502), a discriminating duty of 10 per cent., in addition to the duties imposed by law, is to be collected in the United States on all goods coming hither in foreign vessels, that this extra duty is not collectable when the goods shall come in vessels entitled by treaty or act of Congress to have their cargoes treated as though under the United States flag. The effect of this act was to impose a discrimination of 10 per cent. against merchandise brought from Spanish ports to the United States. The bulk of the Spanish trade of this country being with the colonies, the discrimination proved onerous upon the Spanish shipping of Cuba and Porto Rico, as more than three-fourths of the export trade of Cuba and Porto Rico is with the United States. Ignoring the fact that the American statute did precisely what the Cuban and Porto Rican tariffs already did, and favored imports under a foreign flag, the Spanish Government treated it as unfriendly legislation, and on March 12, 1867, adopted a measure of ostensible retaliation by issuing a decree, the fifth article of which reads thus:

Article 5. Goods coming from ports of the United States and carried under the Spanish flag shall pay, upon being imported into the Island of Cuba, the duties fixed in the tariff for the same goods under a foreign flag, until by a special convention with the Government of that Republic for the abrogation of its laws touching exports in Spanish vessels for the Antilles, or for the reduction of the duties which now bear upon the products of the Antilles in the aforesaid ports, the modification of the present order shall become proper.

It is to be noted that this decree contains an error of statement—the law of the United States to which reference is made being in relation to imports from the colonies, and not exports thither. By this decree all merchandise from the United States, whether carried in Spanish vessels or under any foreign flag, pays the duties of the fourth or highest column of the customs tariff of Cuba and Porto Rico. Foreign merchandise from any other country than the United States might enter those islands, if carried thither in Spanish vessels, on payment of the lower duties of the third column of the tariff, but against the products of the United States the discrimination, before only partial, was made total.

Since 1867 many efforts have been made to remove a state of things so injuriously affecting the bulk of the foreign trade of Cuba and Porto Rico. It was urged by Spain that there was, in fact, no discrimination against the United States flag; that the Spanish vessels trading with our ports were treated precisely as our vessels were, and that the 10 per cent. discrimination imposed by us should be removed. But this Government held that the discrimination in the colonies was positive and total against the trade of the United States, and declined to modify its legislation. By statutes in 1828, 1830 and 1832, Congress gave to the President power, whenever satisfied that no discriminating duties of tonnage or impost are imposed in any foreign country on the vessels or goods of the United States, to suspend any discriminating duties in the United States affecting the vessels or goods of such foreign country so long as perfect reciprocity should exist. This legislation is found in Section 4228 of the Revised Statutes. The President's power under it to effect a remedy and to remove, by agreement with a foreign State, any discrimination weighing on commerce therewith is ample. It had been thought to take advantage of that power by suspending the discriminating duty of 10 per cent., of which Spain has never ceased to complain, but hitherto the Spanish Government has been unwilling or unprepared to afford such concession as would, in fact, insure reciprocal exemption of American vessels in the Antilles from discrimination. It will only remain for the President to issue his proclamation under Section 4228 of the Revised Statutes, suspending the discriminating duties of tonnage and import imposed here against Spanish vessels and products, to establish entire reciprocity of intercourse with the colonies.

The agreement signed by Mr. Foster covers other points of difference heretofore discussed between the two countries. The first of these arose concerning the heavy import duty levied in Cuba on live fish taken at sea and brought into the island by foreign vessels. The duty imposed was practically prohibitory and nearly destroyed a lucrative industry pursued by the fishermen of Florida. The United States tariff imposes no duty on imported live fish, and consequently many appeals have been made to Spain to remove this duty on the grounds of equity and reciprocity. It is now removed by the agreement. There has also been for several years considerable discussion between the two Governments about the asserted right of Spanish consuls to charge, for verifying the manifest of a vessel bound for a Spanish port, a fee based upon the tonnage of the cargo, and not related to the clerical service rendered. This Government has always claimed that such a fee, so collected, was tantamount to an export duty on American goods, levied on the United States by the agents of a foreign power, and objection has been strenuously made to the exaction by a foreign Government outside of its jurisdiction of a duty which this Government cannot exact in view of the Constitutional prohibition of any export duty. Mr. Foster has succeeded in doing away with this obnoxious charge in respect of cargoes for Cuba and Porto Rico, and it is not probable that its collection on shipments to other Spanish ports will be persisted in now that the principle for which the United States contended has been recognized.

RETAILATORY TARIFF LEGISLATION.

January 7.—The sentiment is daily gaining strength among Western Representatives in favor of retaliatory legislation against those countries which exclude American pork, lard and other products on the ground that they are diseased or unhealthful. Representative Browne, of Indiana, to-day offered a bill which authorizes the President to prevent the importation into the United States of German and French wines, liquors and such other articles as he may see fit, until all restrictive or prohibitory laws and regulations by those countries affecting American cattle or swine, or the products of either, are revoked and repealed.

Representative Townsend, of Illinois, offered a resolution, which was adopted without objection, requesting the President to communicate all correspondence, reports and other information on the subject of the exclusion of American hog products by Germany and France. This information is asked as a basis for legislation, which nearly all Western Congressmen, without distinction of party, regard as necessary.

BILLS AFFECTING BUSINESS INTERESTS.

January 7.—Among the bills introduced in the House to-day were the following:

By Mr. Sumner, of California—To fix and establish the maximum rate of freight fares on the Union and Central Pacific railroads. It provides that after 60 days from the passage of this act it shall be unlawful for those companies to charge a greater sum than 70 per cent. of the lowest rates of freight or the lowest prices of carriage existing on December 3, 1883.

By Mr. Perkins, of Kansas—To place molasses and sugar on the free list.

By Mr. White, of Kentucky—To abolish the internal revenue tax on tobacco.

By Mr. Willis, of Kentucky—To extend the time for the payment of tax on distilled spirits now in warehouses.

By Mr. Buckner, of Missouri—To prevent undue contraction of paper circulation; to prohibit the issue of Treasury and bank notes of a less denomination than \$10.

By Mr. Dockery, of Missouri—To reduce the duty on wearing apparel made in whole or in part of wool; to reduce the duty on wool to be manufactured into wearing apparel.

(From Our Own Correspondent.)

WASHINGTON, D. C., Jan. 9, 1884.

A report has just been issued by the Department of Agriculture, showing the relation of agriculture to other industries. By way of showing the comparison of progress between an agricultural and a manufacturing State, the report refers to the development of the material resources of the States of Virginia and Pennsylvania:

AGRICULTURE WITHOUT MANUFACTURES.

"Three hundred years ago Virginia stood as to-day, a beautiful desert, with only

spontaneous crops growing upon her soil, deer and turkeys her only cattle, her waters simply a breeding place for fish, her lands without a market, her ores and coals lying worthless below the soil. Agriculture, manufactures and commerce were practically unknown. Naturally, agriculture comes first, but other industries must follow, or rural arts will pine and struggle through a dwarfed existence. Virginia has heretofore held too exclusively to the idea of the dignity and independence of agriculture. She has hitherto sought wealth in the soil, but is now finding it in the coal mine, the iron ores, the dense forests, the enduring waterfall, and a thousand sources of production which are in their utilization rounding into symmetry and giving volume and momentum to the grand whole of Virginia industry."

MANUFACTURES WITH AGRICULTURE.

"Pennsylvania had a later and slower settlement. She has no seacoast, and is almost destitute of natural water-ways and great aqueous basins for food-fish supplies. But Pennsylvania acted upon the true theory of industrial development—that it should be various and symmetrical, furnishing lucrative employment for male and female, old and young, indoors and in the open air, unskilled and rough, as well as nicely adjusted to the peculiar tastes and finer aptitudes of those who are suffering for something to do."

A COMPARISON.

"More than half of the people of Virginia," says the report, "are farmers; only one in five of the Pennsylvanians are engaged in agriculture. In Virginia the competition is between one farmer and another in the sale of produce for which there is no near market, and the cheapening of products also cheapens the acres on which they are grown. So Virginia farm lands are valued at \$10.80 per acre, while those of Pennsylvania command \$49.30. So says the census of 1880. It also says that the average farm worker of Virginia produces crops worth \$180, while the Pennsylvania agriculturist gets \$431, because of the other four months seeking to be filled and competing for the supply. These are not isolated examples."

THE VALUE OF LANDS.

The report says: "To test the value of this hypothesis, let us divide the States and Territories of the United States into four classes, the first having less than 30 per cent. of the population engaged in agriculture; the second, those with 30 to 50 per cent.; third, 50 to 70 per cent., and fourth, those having 70 per cent. and upward."

The following is the result showing the value of lands:

Classes.	States and Territories.	Value of lands per acre.	Per cent. of workers in agriculture.
First.....	15	\$28.65	18
Second.....	13	30.55	42
Third.....	18	13.53	58
Fourth.....	6	5.18	77

THE INCOME OF THE FARMER.

The report, with some elaboration, then shows, from the census of 1880, that the owners of land find a great advantage in the increase of the proportion of non-agricultural population.

Taking the same classes as above, the report shows:

Classes.	Value of agricultural products per capita.	Proportion of workers in agriculture.
First.....	\$457	18
Second.....	354	42
Third.....	291	58
Fourth.....	190	77

In other words, 1,000,000 farmers in a manufacturing State make nearly three times as much as 2,000,000 farmers in an agricultural State.

THE WAGES OF LABOR.

The returns of the Department of Agriculture, compared with the statistics of the census, show that in 1870 the average wages of farm labor in the manufacturing or first class of States was \$34, while in the fourth or agricultural class it was but \$15. During the panic the competition with farm labor, owing to the non-employment of mechanics, brought the price of farm labor down to a point almost equal to pauperism. In 1882, after the return of manufacturing activity, under the tariff then in operation, agricultural labor again rose in price, averaging nearly \$25 in States of the first and second classes, as above, \$19.50 in the third and \$13.20 in the fourth classes, showing conclusively the great benefits of a large non-agricultural or manufacturing class, and that the fostering of manufactures by home protection is a direct benefit instead of a disadvantage to the agricultural population. It will be well for Senator Beck, Editor Watterson, Speaker Carlisle, Chairman Morrison and Mr. Hewitt to read this report before going much further in their baseless theories.

A NEW FINANCIAL SCHEME.

Senator Sabin, Chairman of the National Republican Committee, comes forward with a new proposition on the financial question, and which some, on account of his relations to the Republican party organization, are inclined to regard as a foreshadowing of party policy. He favors funding the entire national debt in a 2 per cent. loan, and thinks that a loan for that amount could be placed. He does not believe in the extinction of the national debt. He also favors the new bond in place of 1 per cent. tax on circulation of national banks, which would then make an equivalent of 3 per cent. to the national banks on the bonds held as security on deposits. Senator Sabin says that he will press this measure, as he believes that a low-rate permanent security is what the country needs.

KANSAS COTTON.

The Representatives from that active, enterprising and growing State, Kansas, give glowing accounts of the adaptability of its climate and soil to the raising of cotton. They speak of the Southern counties having produced a fine crop of the staple during the past year, and say that gins have been set up to work it.

The first ton of Mexican tin ever sent to this country was recently received. The metal, which is said to be bright, clear and apparently of good texture, came from Durango, in the northern part of which district is the famous iron mountain.

Special Notices.

Notice.

of the Iron Age, 63 Avenue Street, New York.

Again, as "time is money," I would suggest that all goods be sold by tens instead of dozens. No objection could be raised by the manufacturer or jobber, while to the retailer would be a source of great profit in cost marking the many things bought by the dozen. The convenience of the system must be apparent to any one who has ever had occasion to inventory a stock of broken packages. I see only one objection that might be made in regard to convenience in packing such articles as Coffee Mills, Elbows, &c., but, as the price is apparent at a glance, it makes no difference how many are in a package. In fact, I would prefer omitting the word "dozen," and calling the number and price instead. In regard to "case" and "dram," I would not object to paying for new pack-

lw., pkgs...	18	944	Tubes, cs....	8	187
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Quan.	Val.	Quan.	Val.
Nails, kegs, 208	\$721	Cutlery, case, 1	\$4,815
Pumps, 14	3	Nails, cs., 1	63
Valves, cs., 5	276	Sew. ma., cs., 95	2,055
Clocks, pkgs., 7	117	Nails, kegs, 57	176
Locomotive, 1	6,300	Brass g'd case, 1	54
W. mills, pkgs, 7	277	Forces, cs., 1	108
W. metal, pgs, 8	85	Cartridges, cs, 7	110
Mt. iron, pkgs, 192	2,529	Water wheel, 1	192
Hdw., pkgs., 142	839		
Plumb. mat'l., 19	802		
Tin plates, cs, 1	60		
Ag. imp., pkgs, 10	338		
Br. rods, cs., 2	63		
Nails, bxs., 56	732		
Spikes, kegs, 30	86		
Wire, cloth, 2	102		
W. clo's, cs., 3	50		

Quan.	Val.	Quan.	Val.
Ptm., gals., 11,820	1,604	Ptm., gals., 12,000	24,014
Mach'y, pkgs., 91	875	Cutlery, cs., 1	575
Hdw., pkgs., 11	142	Shoe nails, cs., 300	900
Scalcs, cs., 5	63	Ag imp., pkgs, 8	2,025
Nails, kegs, 218	589	Clocks, cs., 58	1,938
Shoenails, 10	40	Ag imp., pkgs, 44	825

Quan.	Val.	Quan.	Val.
Hdw., pkgs., 28	410	Ptm., gals., 12,916	1,998
Pump, 1	150	Mach'y, pkgs, 23	2,803
Clocks, cs., 2	33	Mf. iron, pkgs, 283	3,475
Mach'y, pkgs, 629	13,440	Cartridges, cs, 490	
Ptm., gals., 6593	719	Hdw., pkgs, 181	2,810
Cutlery, cs., 25	525	Cutlery, cs., 27	702
Scalcs, cs., 3	73	Ag imp., pkgs, 28	490
Locomotive, 1	27	Nails, cs., 17	326
Solier case, 1	6,870	Scalcs, cs., 15	126
Mt. iron, pkgs, 63	611	Valves, case, 1	72
Boilers, 2	1,450	Lead, rolls, 3	1,613

Quan.	Val.	Quan.	Val.
Ptm., gals., 5390	859	Ptm., gals., 5000	800
Hdw., pkgs., 21	28	Mf. iron, pkgs, 283	3,475
Ag. imp., pkgs, 10	338	Cartridges, cs, 490	
Pumps, pkgs, 1	191	Hdw., pkgs, 181	2,810
Bells, case, 1	23	Cutlery, cs., 27	702
Nach'y, pkgs, 89	2,111	Ag imp., pkgs, 28	490
Nails, kegs, 45	125	Nails, cs., 17	326
Corp. case, 8	73	Scalcs, cs., 15	126
Nails, bxs., 11	92	Valves, case, 1	72
Iron safe, 1	45	Lead, rolls, 3	1,613
Cutlery, case, 1	110	Plumb. mat'l., 19	802
Iron, bds., 16	51	Cartridges, cs, 490	

Quan.	Val.	Quan.	Val.
Ptm., gals., 151,084	18,575	Ptm., gals., 151,084	18,575
Fire crackers, 479	2,575	Mach'y, pkgs, 23	2,803
Cot. gins., cs., 6	400	Mf. iron, pkgs, 283	3,475
Iron, cs., 200	945	Cartridges, cs, 490	
Mf. iron, pkgs, 283	3,475	Hdw., pkgs, 181	2,810
Cutlery, cs., 19	800	Cutlery, cs., 27	702
Ag. imp., pkgs, 14	875	Ag imp., pkgs, 28	490
Hdw., pkgs., 141	1,160	Nails, cs., 17	326

Iron safe.....	1	45	Pumps, pkgs.	9	150
Cutlery, case.	1	110	Clocks, pkgs.	14	638
Iron, bbls....	16	51	Jacks.....	20	286

<i>Brazil.</i>		<i>Argentine Republic.</i>			
Ptm., gals. 154,284	18,575	Mach'y, pkgs.	14	1,650	
Fire crackers,		Cutlery, ca.....	34	1,070	
pkgs.....	479	2,575	Revolvers, ca.	2	1,150

223.75. Lead, 80 @ 31, and Spelter, 89.75 @ 40.25. Iron.—Iron remains unfavorably situated in this market, both for the iron and merchant selling for 15.50 francs @ 100 kg., there being besides a weak feeling. Charcoal iron is quoted 24; sheets are worth 23 @ 26, and Wire Nails, No. 18, in bulk, 27. France at present consumes about half of what it produces of iron. While this is the case foreign finished iron is extensively imported; hence the uncomfortable state of affairs in our iron regions. At the North there is great tranquility, owing to the season; makers have for the present a fair amount of unfilled orders, and hope to bridge over the time between now and the spring, without any particular hardship. The Haute-Marne is moderately active, but prepares to take stock; what is doing is limited to old orders, new ones being scarce. They quote Coker, 18 @ 15.50; Mixed, 19 @ 16; Wire Nails, No. 18, 27; No. 18 do., for export, 29 @ 31.50, at Marseilles. In the Haute-Marne two blast furnaces are about to be blown out in the Longwy district. Shipments of Pig thence last month, 35,000 tons; stock light—say 3,000 tons. In Central France St. Etienne remains quiet, but there has been an improvement of 1 franc in finished @ 100 kg. The Firminy Steel works now compete with England, Germany and Austria in the manufacture of steel Piano Strings. Coal.—Our market is unsettled by the threat of a general strike.

BELGIUM.

(Moniteur Industriel.)

BRUSSELS, Dec. 24, 1883.—Iron.—At an adjudication of railroad material, of which the Government stood in need, the decline submitted to by makers was much greater than expected; the lowest tender shows a basis of value precisely 25 below the price 18 months since. While November has still been a tolerably busy month for our rolling mills, December has, on the contrary, been excessively dull in their branch; this to some extent also affects Pig Iron, and both this and finished remain flat. We quote in francs, @ 100 kg.: English Pig, 5.37 1/2 @ 5.40, which is a decline; Charleroi, 6.80, weak, and Luxembourg, 5.50 @ 5.60. Foundry Puddling is even worse off, stocks being excessively large, so that it is seriously spoken of that at Charleroi three blast furnaces are to be blown out. Merchant may be shaded from 12.50; Beams are worth 12.75 @ 13.25; Corners, 12.35. Sheet iron is easy at 16.50 No. 2; 18.50 No. 3; Commercial, 22.50; Thin, 24.50, and No. 4, 26.50. In the Liege basin, it should be remarked, however, the rolling mills continue steadily busy, notably the most important of them—that of Cockerill, for example—the number of whose workmen is the same as it was last year at this time. The outlook for next spring in the iron trade appears to us, if not precisely brilliant, at least tolerably reassuring from a general point of view; crops have been good, money is easy, iron and steel are low enough to facilitate an unusual rate of consumption, and the political outlook is without a cloud. Coal has been getting on very well, notwithstanding the short duration of the severe winter weather we had, and prices remain as firm as before.

GERMANY.

(Borsenhalles.)

HAMBURG, Dec. 24, 1883.—Iron.—The dull state of affairs in the iron trade has been intensified by the holiday season and the approaching stock-taking. Pig iron being altogether neglected. Finished iron is only wanted to fill urgent monetary requirements. Even the steel works begin to feel a dearth of fresh commands, and sell steel rails at very low figures for export; thus the Bochum people sold the Portuguese Government 16,000 tons, with everything appertaining thereto, for 124 francs, free in Lisbon, thus beating the John Cockerill Company of Seraing, Belgium, by 6.80 francs @ ton, and the Ruhrort Steel Works, of Meiderich, by 11 francs. As the freight from Bochum via Antwerp to Lisbon is 18 francs, the 106 francs remaining to the Bochum people are equal to 35 marks @ ton at the rolling mills; yet the Bochum people make their own Bessemer Pig, it leaves them a profit. At any rate, it shows that works favorably situated are able to make money even at such low figures. The big concern, the "Gute Hoffnungs hütte," of Oberhausen has just declared a 4 1/2 dividend on its capital of 18,000,000 marks. This company is the owner of a dozen works and mines, having in its employ at present 7,000 operatives, against 9,000 when in full blast. The shares are nearly all owned in one family, the family, and the concern is one of the most important in Rhine-Westphalia. Lubricating Oil, to date from January 1, 1884, is to pay a duty of 6 marks @ 100 kg., having entered Germany duty free till then. This provokes a good deal of discontent among consumers thereof. Metals have been very quiet, yet Lead is firmly sustained at 12.50, German; Copper is steady at 75.50, Lake Superior; Tin quiescent at 95 @ 99, and Spelter, without anything doing, at 15.15 @ 15.50.

SPAIN.

(Revista Minera.)

MADRID, Dec. 24, 1883.—Iron Ore.—Campanil is steady at Bilbao at 7 @ ton, and Rubio at 6 1/4. Shipments of Metals and Ores from Spain During the First Nine Months.

	1881.	1882.	1883.
Tons.			
Calamine.....	25,561	23,450	26,074
Copper Ore.....	34,445	42,381	44,828
Iron Ore.....	2,556,830	3,174,065	3,343,838
Other Ores.....	52,745	48,128	71,696
Quicksilver, in flasks.....	1,273	1,033	494
Copper, ingots.....	12,199	15,781	18,294
Finished iron.....	27,650	27,797	27,250
Pig Lead.....	77,506	87,759	98,025
Total.....	3,114,501	3,887,581	4,081,500

The decrease in Quicksilver and increase in Lead will be noticed.

HOLLAND.

(Koch & Plietboom.)

ROTTERDAM, Dec. 22, 1883.—Tin.—Our market had risen half a guilder @ 50 kg. and was firm at the improvement for a couple of days, but now closes weak at 50, Billiton, spot, and 50.50 March delivery, while Banca is worth 51, spot, and 51.50 from next sale.

AUSTRIA.

(Austrian Trade Journal.)

VIENNA, Dec. 24, 1883.—Iron.—Business continues brisk. All our furnaces have sold out six months ahead both in Austria proper and Hungary, causing Puddling Pig to remain very firm. Finished iron is in active request, while our steel works are loaded down with demands. All machine shops are busy. There is a great demand for railroad material and rolling stock in consequence of the opening of the Arlberg tunnel. Prices stiff throughout the list.

EAST INDIES.

(Dummler & Co.)

BATAVIA, Nov. 14, 1883.—Tin.—The next Tin sale of about 10,000 piculs is to come off on the 22d prox., to be followed by one of about the same quantity on Feb. 20, and another similar one on April 20. In Swedish iron there is no business to report. English Bars have found buyers at 4.75; Sheets, at 4.75, and Corrugated Sheets from 12.50 to 14, according to sizes. English Copper sheathing, in assorted numbers, has fetched 65; Wire Nails, from 19.50 to 11. Petroleum.—With the arrival of 78,550 cases additional from New York the market is overstocked and no business has been transacted. Coal is very dull and consumers are fully supplied. Exchange, 6 months' sight on London, 11.80 @ 11.82 1/2.

(Hessener & Co.)

COLOMBO, Nov. 27, 1883.—Pinebago.—There is a demand for fine quality only; the market is very weak, rates being almost unquotable. We nominally quote, in rupees, @ ton: Fine Lump, 130 @ 135; Ordinary, 130 @ 125; Chips, 60 @ 65, and Dust, 40 @ 45. Shipments since October 1 to England, 17,758 cwt.; to India, 213, and to the United States, 12,101; together, 30,075, against last year, 51,655; 42,875 in 1881, and 17,512 in 1880. Exchange, six months' sight on London, 1/7 1/4.

(Schmidt, Kustermann & Co.)

PENANG, Nov. 21, 1883.—Tin.—There has been a considerable decline since the 8th instant. The market opened at 28.27 1/2 and dropped to 27, but had a slight rebound to 27.30, at which it closes. Receipts have amounted to 3132 piculs, and the sales to 3890, of which Chinese took 4500. Exchange, six months' sight on London, 8/9 1/4.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From Our Regular Correspondent.)

LONDON, ENG., Dec. 24, 1883.

THE HOLIDAYS

are now close upon us, and from to day (Christmas Eve) there will be a welcome recess, during which the multifarious cares of business will be relinquished for the the social dissipation which is customary at this season of the year wherever white men are dominant. In England, Wales and Ireland Christmas is the holiday of the year, while in Scotland the New Year is specially honored. In the North of England both occasions are duly recognized in a manner which does considerable credit to the hard-headed Northerners. Here, in London, New Year's Day is not kept as a general holiday, its place being usurped by Boxing Day—the day after Christmas Day—which is a thoroughly hilarious occasion in all the domains of Cockneydom. I am afraid I am rather late in the day this year with my seasonable compliments; still, I will risk the editorial sanction, and wish all my thousands of Transatlantic readers a very "happy and prosperous New Year!"

THE BUSINESS SITUATION

is virtually unchanged since my last—in fact, with the festivities, balance sheets and stock-taking upon us, we are scarcely capable of paying a proper amount of attention to business in general. As a whole, however, it must be admitted that "things are dull," and that prospects are anything but brilliant. It is rumored that the balance of work to be carried over to next year will in most cases be of limited proportions, and it is feared that balancing up will in not a few instances be an unpleasant operation. I do not in all respects hold the latter opinion, because I fancy that the low prices, of which there are universal complaints, have been compensated for by increased turnovers, so that the year's business may not prove to have been so wholly unprofitable to those who merely look upon the surface of things. The speculators, however, have had a poor year altogether—perhaps the worst for nearly a decade. Margins on iron have rarely exceeded a few pence, and have been almost invariably on the decline, so that nothing short of a decided and unwavering "bear" policy can have been successful. In conversation the other day with a well-known provincial iron merchant, he admitted my soft impeachment to the foregoing effect, and his opinion was that we have to go through a much worse state of things yet before we can hope to have even a decent chance for the better. In London there are curious (and it may be quite inaccurate) rumors about as to the alleged deplorable state of affairs on the floor of the Metal Exchange. The brokers are said to be "starving," and it is said that certain of them who have been conspicuous manipulators and "bulls" of leading metals must have lost enormous sums of late. It is not improbable that these reports are well-founded—my information is first-hand—but I should serve no good purpose by citing names or amounts, which are freely bandied about in iron and metal circles in and out of London.

THE IRON MARKET

is very quiet, as is usually the case just prior to the end of the year, when there are many good reasons for minimizing all business transactions to the utmost extent. Practically, the year ends to-day, seeing that for some days after Christmas Day it is not an easy matter to get the men to work, even if trade is brisk, while at the close of the year and beginning of the new year stock-taking and balancing operations lead to a week or two of enforced idleness. The open markets have again remained extremely quiet all round, with only a moderate amount of new business doing, although there are numerous inquiries about for pig and merchant iron, which would seem to show that in some quarters there is more confidence in the near future than is generally expressed. At Glasgow warrants have been weak and have declined in value, the closing price being 43 7/8 @ ton. Scotch makers' brands are fairly steady, the decline of values in two or three instances being set off by slight increments in other cases. The shipments of Scotch pig are good for the season, and the total bids fair to be 4000 or 5000 tons ahead of 1882, the increase having been mostly coastwise, and not to foreign destinations. In my next impression I hope to be enabled to give the annual statistics, which are expected to show an appreciable reduction in the total stocks held in Scotland, as compared with last year's aggregate. At Middlesboro' the course of pig-iron prices is still downward, No. 3 being quoted as 36/6 merchants, and 36/9 by makers. Futures are very dull. Shipments are on a moderately good scale for the season, especially for Scotland, but are necessarily much less than during November. For this and other cogent reasons, stocks are certain to increase by the end of the month, thereby damaging the statistical position. It is rumored that the make of pig iron is likely to be formally restricted, but I have as yet no reliable information to that effect. In hematite pig there is only a small turnover on new orders, so that prices are quite nominal at 45/6 @ 46/6 @ ton for West Coast mixed lots in usual proportions.

In Lancashire, Lincolnshire, Staffordshire, Derbyshire, &c., all grades of crude iron are quiet and slow of sale, while deliveries are being kept down to suit the convenience of users. In heavy manufactured iron there is scarcely any news, except that values of many kinds are gradually diminishing. For North of England ship plates the current price is £5. 15/; common bars, £5. 10/; angles, £5. 2/6 @ £5. 5/; and puddled bars, £5. 10/ @ £5. 12/6, net cash. In Staffordshire finished iron is dull and nominal at the rates frequently mentioned in these reports of late. There is some "guessing" as to the probable course of list prices with the advent of the new year, but we do not rather than the £7. 10/ basis is likely to be departed from to any material extent, although it is

sufficiently well known that these figures do not accurately represent actual selling prices. In common bars a fair business is being done, Welsh being steadier at £5. 7/6, less discount, for India assortments. Sheets are also in tolerably good request for galvanizing and working-up uses. Fencing wire and galvanized iron are, nevertheless, dull and irregular. There is some little inquiry for light sections of iron rails, 25 to 30 pounds @ yard, but as £5. 5/ @ £5. 7/6 is asked, business is not lively. Of old rails Italy is still a buyer of D. H. and flange at about 70 @ ton, c.i.f. Genoa, &c., but sales are checked by the firmness of holders. Heavy wrought-iron iron is quiet at £2. 12/6, or 80 @ ton, f.o.b. London, &c. Cast scrap is neglected and nominal. Freighters are virtually without alteration, but are in most instances easy. For pig iron by ordinary steamer from Glasgow to New York, 4 @ ton has been accepted. Liverpool rates are proportionately low for pig iron and finished iron, while tin plates are being taken at irregular rates. Steel is without special features to note in any respect. The Sheffield houses are mostly without pressure, and the Bessemer concerns are now slacker than for some time past. The latter, however, have been disposing of large quantities of billets and rolled sorts. There is no export call for crop ends, but a satisfactory turnover has been effected at home for re-rolling purposes. Some business has been done in old railway leaf spring steel at 72 @ ton, net cash, c.i.f. New York. For Bessemer blooms the nominal price may be stated at £4. 5/ @ £4. 7/6 @ ton, but without export sales. Steel rails are reported to be a shade steadier, the low prices lately quoted being said to have brought forward buyers, who have placed a few orders for various deliveries over 1884, on the basis of £4. 10/ @ ton, cash, f.o.b. Welsh, &c., ports. It has been proposed to restrict or regulate the production of steel rails, which proposal has been discussed at meetings of the manufacturers held in Paris and London, respectively, last week and the previous week. No definite result appears to have been arrived at, and there is reason for assuming that the proposal will fall through.

SCOTCH PIG IRON

has again been very quiet, with lower prices and a limited range of business. This, of course, was to be expected at the time of year. The official returns are expected to be ready for issue by about December 29, and will, it is anticipated, show a reduction of some 30,000 to 50,000 tons in the total stocks. This estimate is based on the anticipation that the recent reduction in the production, coupled with the steady demand for leading makers' brands, have lowered the holdings of the smelters themselves. There are now 102 furnaces at work in Scotland against 112 a year ago. In Connal's stores the stocks amount to 53,728 tons, as against 605,910 tons this date 1882. Shipments to date have been 616,050 tons, compared with 608,784 last year, an increase of 7266 tons. Middlesboro' importations into Scotland have been 269,533 tons, an augmentation of 37,957 tons during the year. Writing from Glasgow on December 22, James Watson & Co. said: "The Scotch pig-iron market has been weaker this week, with only a limited business doing. The warrant market opened quiet last Monday with transactions at 43/11 and 43/10 1/2, and on the following day from 43/10 to 43/8 1/2 @ ton. On Wednesday it was flat and prices receded from 43/9 to 43/6 @ ton. Yesterday the market was steady at 43/7 @ 43/6, cash; to-day we opened firm with business from 43/7 to 43/9, cash, closing buyers at 43/8 @ ton. The shipments last week were 10,421 tons, as compared with 6313 tons for the corresponding week of last year." We quote:

	No. 1.	No. 2.
G. M. B., at Glasgow.....	48/	46/
Clyde.....	48/	46/
Coltness.....	48/	46/
Langloan.....	48/	46/
Garthshore.....	48/	46/
Summerlee.....	48/	46/
Calder.....	48/	46/
Carnbroe.....	48/	46/
Glenarnock, at Ardrossan.....	48/	46/
Eglinton.....	48/	46/
Dalmington.....	48/	46/
Shotts, at Leith.....	48/	46/
Kinnell, at Boness.....	48/	46/
Carron, at Grangemouth.....	48/	46/

MIDDLESBORO' PIG IRON

is again weak and lower in value, and in a depressed condition generally, owing to the falling off in the demand for shipbuilding iron, and the fact that prices have now reached a level at which sales are believed to leave only the barest possible margin of profit. No. 3 has changed hands at 36/6, and it is rumored that 36/ has been quoted in some cases by second holders. G. M. B., f.o.b. makers' wharves in the Tees, net cash, are:

	No. 1.	No. 2.
No. 1 Foundry.....	40/6	Mottled..... 34/6
" 2.....	39/6	White..... 31/
" 3.....	38/6	Refined Metal..... 34/
" 4.....	35/6	Kendage..... 39/6
" 4 Forge.....	35/	Cinder..... 38/

TIN PLATES

here are quiet, but steady, and though there is at the moment very little new business coming forward for America, makers are, as a rule, running their mills to their full capacity, and are not particularly anxious to book orders except at market prices. I quote coke tins, 15/9 @ 16/; wasters, 15/ @ 15/3, and charcoal tins, 17/9 @ 20/. At Liverpool the market is steadying itself a little. There have not been quite so many plates offering during the past week, and in addition to this there have been a few more inquiries about, including several from your market, though it cannot be said that the American houses are in the market for large quantities. The inquiry for ordinary size coke tins is still of a very limited character. Still, there are many orders for special sizes to hand, and oftentimes it is with difficulty these are placed, being for special brands. The majority of makers, being well booked ahead, are not in a position to add many hundred thousands to their order-books, unless it is for very forward delivery, and this they are not greatly inclined to do. Many makers refuse to book orders for squares and odd sizes under a basis of 17/1. C.; but the price of the general run of coke tins ranges from 15/9 to 16/6 T. C. This proves the trade to be in a sound and healthy condition, and, considering that the demand has fallen off so very much of late, prices have kept up remarkably well. Coke-tin wasters

of various grades, in 14 x 10 size, are selling at from 15/ to 15/3, and 14 x 20 3d. more. The demand for these, though not so great, yet is regular. Coal and tin plates and tins are, as well as best coke tin plates, are not in great demand this week. Of the few inquiries that are to hand, not much business has been done. The usual orders for specialties for the States, such as various kinds of squares and stamping plates, are not coming forward to the extent that was expected before the close of the year. There is nothing to be expected now but a quiet time of it until the next quarterly meeting of the trade. Prices of charcoal tins range from 18/ to 19/ T. C.; best charcoal are 1/ or so more; tins, 16/ @ 16/3; C. 14 x 20, 32/ @ 33/; C. 28 x 20, best coke tin plates, 17/ @ 17/3, T. C.; steel plates a trifle more.

THE ANNUAL TABLES

of statistics are now beginning to make their appearance, although the official figures will not be out for some time to come. As a matter of fact, the mineral statistics (transferred to the Home Office since the retirement of Mr. Hunt) for 1882 have not yet been issued:

WEST COAST HEMATITE, 1883.

Workington and other Ordinary Brands.

Date, 1883.	No. 1.	No. 2.	No. 3.	Total
January 5.....	54 d.	53 d.	52 d.	62
February 2.....	54 d.	53 d.	52 d.	60
March 2.....	53 d.	52 d.	51 d.	59
April 8.....	53 d.	52 d.	51 d.	58
May 4.....	52 d.	51 d.	50 d.	58
June 1.....	51 d.	50 d.	49 d.	58
July 6.....	51 d.	50 d.	49 d.	58
August 3.....	51 d.	50 d.	49 d.	58
September 1.....	50 d.	49 d.	48 d.	58
October 5.....	49 d.	48 d.	47 d.	58
November 2.....	49 d.	47 d.	46 d.	58
December 1.....	47 d.	47 d.	46 d.	58

SCOTCH PIG IRON.

Month.	1882.	1883.
January.....	105	105
February.....	105	105
March.....	105	105
April.....	105	105
May.....	105	105
June.....	105	105
July.....	105	105
August.....	105	105
September.....	105	105
October.....	105	105
November.....	105	105
December.....	105	105

Month.	1882.	1883.
January.....	105	105
February.....	105	105
March.....	105	105
April.....	105	105
May.....	105	105
June.....	105	105
July.....	105	105
August.....	105	105
September.....	105	105
October.....	105	105
November.....	105	105
December.....	105	105

Month.	1882.	1883.
January.....	105	105
February.....	105	105
March.....	105	105
April.....	105	105
May.....	105	105
June.....	105	105
July.....	105	105
August.....	105	105
September.....	105	105
October.....	105	105
November.....	105	105
December.....	105	105

Month.	1882.	1883.
January.....	105	105
February.....	105	105
March.....	105	105
April.....	105	105
May.....	105	105
June.....	105	105
July.....	105	105
August.....	105	105
September.....	105	105
October.....	105	105
November.....	105	105
December.....	105	105

Month.	1882.	1883.
January.....	105	105
February.....	105	105
March.....	105	105
April.....	105	105
May.....	105	105
June.....	105	105
July.....	105	105
August.....	105	105
September.....	105	105
October.....	105	105
November.....	105	105
December.....	105	105

Month.	1882.	1883.
January.....	105	105
February.....	105	105
March.....	105	105
April.....	105	105
May.....	105	105
June.....	105	105
July.....	105	105
August.....	105	105
September.....	105	105
October.....	105	105
November.....	105	105
December.....	105	105

helpers out of their earnings. As a result the works stopped and 200 men are thrown out of employment.

Elia Furnace, at Sharon, has been banked up by the owners, Boyce, Wheeler & Co.

The three stacks of the Copley Iron Company, at Copley, Lehigh County, are now idle, their last stack having been blown out last week.

The Lehigh Zinc and Iron Company, at Bethlehem, have reduced the wages of their employees from 5 to 10 per cent. The time of the yard men has been reduced from 11 to 9 1/2 hours a day. The recent fall in the price of metal is the cause of the reduction. The wages of the yard men will now be about \$1.05 per day. The reduction took effect yesterday.

Five nail machines are running in the factory of the Pottstown Iron Company and are manned by boys in charge of one of the foremen of the factory. None of the nailers have gone to work. The officers of the company are, however, making attempts to secure men to run the works full.

PITTSBURGH AND VICINITY.

The workmen of the galvanizing department in Oliver & Roberts's wire mill, who have been on strike against a reduction of wages for the past two weeks, and on whose account a fracas occurred with new hands last Friday night, returned to work at the reduction yesterday morning.

The Crescent Steel Works of Miller, Metcalf & Parkin, in Lawrenceville, started up yesterday, the works having been shut down for the holidays and for the purpose of taking stock. Accumulated orders will keep the works busy for some time.

Several departments of the Superior Rail Mill, at Wood's Run, have started up, and it is thought that the whole mill will be in operation in a few days.

OHIO.

Steuersville Furnace was sold last week to L. Ray and others, the purchasers being mortgage bondholders. Price paid, \$20,200. The indebtedness is \$55,000, which balance will have to be made up by the stockholders. The works originally cost about \$200,000.

WEST VIRGINIA.

WHOLESALE METAL PRICES, January 9, 1884.

(For Wholesale Hardware Prices, See Pages 27, 28.)

METALS.

IRON.—Duty: Bars, 8-10¢ to 11-10¢ per lb.; provided that no Bar Iron shall pay a less rate of duty than 35¢. Sheet, 11-0¢ to 15-10¢ per lb. Band, Hoop and Scroll, 1¢ to 1-10¢ per lb. Railroad Bars weighing more than 25 lb per yard, 7-10¢ of 1¢ per lb.

American Iron.
Foundry No. 1..... ton \$20.00 @ 22.00
Foundry No. 2..... ton 19.00 @ 20.00
Gray Forge..... ton 17.50 @ 18.75

Scotch Iron.
Carnbroe..... ton 21.00 @ 22.00
Coltness..... ton 22.25 @ 23.25
Glenarnock..... ton 21.00 @ 22.00
Gartsherrie..... ton 22.50 @ 23.50
Langloan..... ton 22.50 @ 23.50
Summerlee..... ton 22.00 @ 23.00
Dalmellington..... ton 20.00 @ 21.00
Eglington..... ton 20.00 @ 21.00

Rails.
Steel, at Eastern mills..... ton @ 34.50
Old Rails, Ts..... ton 21.00 @ 22.00

Scrap.
Wrought, per ton, from yard..... 22.50 @ 23.00

Bar Iron from Store.

Common Iron:
3/4 to 1 in. round and square..... per lb @ 2.10¢

Refined Iron:
3/4 to 1 in. round and square..... per lb @ 2.30¢

1 to 6 in. x 3/4 to 1 in..... per lb @ 2.40¢

Rods—5/8 and 1 1/8 round and sq..... per lb @ 2.40¢

Bands—1 to 6 in. x 3/4 to 1 in..... per lb @ 2.40¢

"Burden's Best" Iron, base price..... per lb @ 3.10¢

Burden's "H. B. & S." Iron, base price..... per lb @ 2.70¢

Ulster Iron, base price..... per lb @ 3.70¢

Norway Nail Rods..... per lb @ 3.70¢

Sheet Iron. Common R. G.

Nos. 10 to 16..... per lb @ 3.00¢ @ 3.20¢

17 to 20..... per lb @ 3.25¢ @ 3.50¢

21 to 24..... per lb @ 3.50¢ @ 3.75¢

25 and 26..... per lb @ 3.75¢ @ 4.00¢

27..... per lb @ 4.00¢ @ 4.25¢

28..... per lb @ 4.25¢ @ 4.50¢

Galvanized, 10 to 20..... per lb @ 6.50¢ @ 6.75¢

Galvanized, 21 to 24..... per lb @ 7.00¢ @ 7.25¢

Galvanized, 25 to 28..... per lb @ 7.50¢ @ 7.75¢

Galvanized, 29..... per lb @ 8.00¢ @ 8.25¢

American Russia..... per lb @ 10.50¢ @ 10.75¢

Russia..... per lb @ 13.00¢ @ 13.25¢

American Cold Rolled B. B..... per lb @ 7.50¢ @ 7.75¢

Iron Wire. See Wire.

STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb or less, 45¢ ad. val.; valued above 4¢ and not above 7¢ per lb, 25¢ ad. val.; valued above 7¢ and not above 10¢ per lb, 35¢ ad. val.; valued above 10¢ per lb, 45¢ ad. val. Extras—Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 15¢ per lb in addition to above; Steel Circular Saw Plates, 1¢ per lb in addition to the above.

American Cast Steel.

For American Steel, see Pittsburgh quotations.

English Steel.

Best Cast..... per lb @ 15.00¢

Extra Cast..... per lb @ 16.00¢

Circular Saw Plates..... per lb @ 9.00¢

Round Machinery Cast..... per lb @ 9.00¢

Swaged Cast..... per lb @ 17.00¢

Best Double Shear..... per lb @ 15.00¢

Blister, 1st quality..... per lb @ 13.00¢

German Steel, Best..... per lb @ 13.00¢

3d quality..... per lb @ 11.00¢

Sheet Cast Steel, 1st quality..... per lb @ 15.00¢

2d quality..... per lb @ 14.00¢

3d quality..... per lb @ 13.00¢

TIN.—Duty: Bars, Block and Pigs free.

1¢ per lb; Bars, Block and Pigs free.

Banco..... per lb @ 22.00¢

Straits..... per lb @ 21.00¢

English..... per lb @ 21.00¢

Bar..... per lb @ 23.00¢

Charcoal Tin Plates.

I C 10x14..... 225 sheets..... per box \$6.00 @ \$6.75

I C 12x12..... 225 sheets..... 12.50 @ 13.00

I C 10x14..... 225 sheets..... 7.25 @ 8.00

I C 12x12..... 225 sheets..... 7.25 @ 8.00

I C 10x14..... 225 sheets..... 6.00 @ 6.50

I C 12x12..... 225 sheets..... 6.00 @ 6.50

I C 10x14..... 225 sheets..... 6.00 @ 6.50

I C 12x12..... 225 sheets..... 6.00 @ 6.50

For each additional X add..... 1.75

Coke Tin Plates. Ordinary.

I C 10x14..... Best..... \$5.30 @ \$5.75 @ \$5.25

I C 12x12..... Best..... 5.00 @ 5.75 @ 5.25

I C 10x14..... 10.50 @ 10.50 @ 10.50

I C 12x12..... 10.50 @ 10.50 @ 10.50

I C 10x14..... 13.50 @ 13.50 @ 13.50

Tin Boiler Plates.

I X 14x36, 2 sheets for No. 7, 112 sheets..... @ \$18.50

I X 14x36, 2 sheets for No. 8..... @ 14.00

I X 14x36, 2 sheets for No. 9..... @ 16.00

I X 14x36, 2 sheets for No. 10..... @ 18.00

COPPER.—Duty: Pig, Bar and Ingot, 4¢; Old articles of which Copper is a component of chief value, 35¢ ad. valorem.

Ingot, Lake..... per lb @ 15.00¢ @ 16.00¢

Ingot, Baltimore..... per lb @ 14.00¢ @ 14.50¢

Braziers' Copper, ordinary sizes, 16 oz. per sq. ft. and over..... @ 25¢

Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz. per sq. ft..... @ 27¢

Braziers' Copper, 10 oz. and 12 oz. per sq. ft..... @ 30¢

Lighter than 10 oz. per sq. ft..... @ 32¢

Circles less than 24 in. in diam..... @ 31¢

" 84 in. diam. and over..... @ 31¢

Segment and Pattern Sheets..... @ 35¢

Locomotive Fire-Box Sheets..... @ 35¢

Sheeting Copper, over 12 oz. per sq. ft..... @ 34¢

Bolt Copper..... @ 25¢

Copper Bottoms, 14x18..... @ 25¢

Tinned Sheet, 14x18, 14, 16, 18 oz. per sq. ft..... @ 34¢

Tinned Sheet, Planished, 14, 16, 18 oz. per sq. ft..... @ 34¢

Tinned Sheet, Planished for boilers, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100..... @ 36¢

Nickel-Plated Sheet..... @ 40¢

Plating extra..... @ 40¢

Flat Copper Boiler Bottoms or Pit Bottoms, cut to special sizes..... @ 36¢

Finishing.

14x18, by the case..... per sheet 3¢

14x18, less than case..... per sheet 3¢

For tinning 2 both sides, double the above amount.

O'Neill's Patent Planished Copper, Net..... 14x18

12 and 16 oz. and heavier, 35¢ By the case, per sheet 3¢

12 oz. and lighter..... 35¢

7 in. 14x18, 9 in. 14x20, 14 and 16 oz. and heavier, 37¢ By the case, per sheet 3¢

(And all sizes not over 30 in. wide.)

14 and 16 oz. and heavier..... per sheet 3¢

12 oz..... 35¢

Copper Wire. (See Wire.)

Yellow Sheathing Metal, 20 @ 22¢

BRASS AND GERMAN SILVER.

Brown & Sharpe's Gauge the Standard for Metal;

Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—Dis. 35¢

For less quantity than 100 lb, add 3¢ per lb.

High Brass.

All Nos. not thinner than No. 28, wider than 2 in., not wider than 14 in..... 30¢

All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive..... 35¢

All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive..... 40¢

1/2 in. ad. val. on each No. above No. 28 to 35, inclusive.

All Brass thinner than No. 35 is Platers' Brass, at 50¢

Sheets 24x36 in., and all sheets cut to particular sizes and lengths under 30 in. in width wider than 2 in..... 87¢

Printers' Rules..... 45¢

Sheets wider than 30 in. and under 40 in..... 47¢

40 in. and over..... 50¢

Circular sheets, in diam. from 4 in. to 14 inclusive..... 40¢

" " " " over 14 " " " " 40¢

" " " " " " " " 40¢

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The Westinghouse Air Brake Company have patented an important improvement recently invented by Mr. George Westinghouse, Jr., for an arrangement of the hose pipes between the cars in connection with the automatic brake, the use of which will prevent the application of the brakes by the bursting of any one hose. With this arrangement trains will never be stopped by the bursting of hose, because it requires two pieces of hose between each car to burst at the same time to empty the brake-pipe. By its use the hose-pipes can be kept in use until they are actually ruptured; whereas, without it, the hose must be examined and removed if they appear to be defective. The increased length of time that hose can be used, and the freedom from stoppage by their bursting, will more than justify the necessary outlay for putting on this arrangement. Cars provided with the double couplings can be run in connection with cars provided with the single coupling.

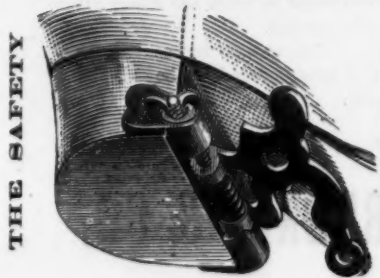
A novel manner of applying a suspending eye or ring to enameled sheet-metal ware, such as wash-basins and the like, has been patented by W. F. Niedringhaus, of St. Louis, Mo. The vessel is slotted near and parallel to its edge, and into the slot is slipped an eye, having two prongs at its end, in such a way that the eye enters the interior, while the prongs remain at the outside of the vessel. Next the prongs are spread out horizontally and concealed within a bead formed around the top of the vessel. Finally the eye is turned upward, to project over the bead.

Samples of New Instantaneous Process Photography.



View at office door, SCOTT MFG. CO., Baltimore, in rush for SAFETY ICE CREEPERS first icy morning this year.

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Solid Steel Stamped, Very Strong and Light

ICE CREEPER.

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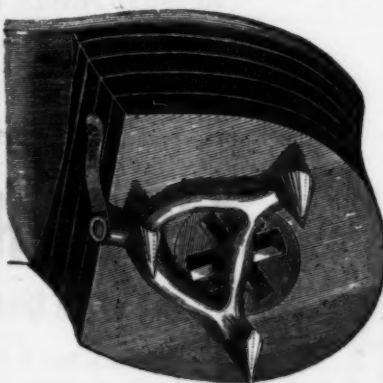
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Can be attached to or removed from a boot or shoe in two seconds, and does not have to be worn for weeks when there is no snow. Prices and discounts given on application.

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It has no valves to become obstructed and no screw joint to become immovable by rust. Advantage of the Crosby Bucket over All Others.—1. It has an air chamber on top which conducts the air to the bottom of the tube, which allows it to expand and the groove in the side to contract. 2. The wear comes on the whole side, and not on the extreme edge, like other buckets. 3. It contains more solid rubber than three of any other manufacture.

Three sizes—14 inch for deep wells, 16 inch for 20 feet or less, 2 inch for stock pumps. No charge for Territorial Rights. NONE GENUINE unless A. D. Crosby appears in raised letters on base of each Bucket.

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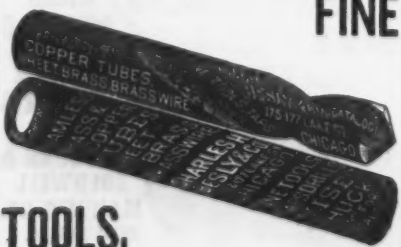
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FOR WOOD TRACK.

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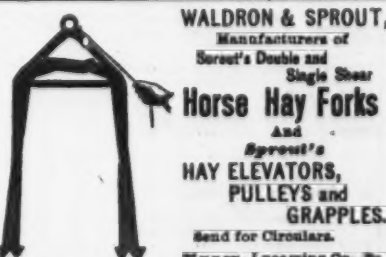
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The Atlantic White Lead and Linseed Oil Co.,

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CORRUGATED BOILER FURNACES.



1. They are made of a single steel plate, welded at the bottom, with no joint in contact with the flame.

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3. They throw off all scale by their elasticity.

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5. They require, to comply with the rules of the Board of Trade in England, only one-half the thickness of plate of plain furnaces for equal working pressure.

6. Where a plain furnace of equal length, diameter and thickness collapsed at 225 pounds, the Corrugated stood 1000 pounds per square inch.

Since five years 700 steamers were fitted with these furnaces, among them the Alaska, Oregon, City of Rome, Servia, Elbe, Werra, Fulda, &c.

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Wholesale Hardware Prices, January 9, 1884.

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HARDWARE.

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American	100-110	110-115	115-120	120-125	125-130	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170	170-175	175-180	180-185	185-190	190-195	195-200	200-205	205-210	210-215	215-220	220-225	225-230	230-235	235-240	240-245	245-250	250-255	255-260	260-265	265-270	270-275	275-280	280-285	285-290	290-295	295-300	300-305	305-310	310-315	315-320	320-325	325-330	330-335	335-340	340-345	345-350	350-355	355-360	360-365	365-370	370-375	375-380	380-385	385-390	390-395	395-400	400-405	405-410	410-415	415-420	420-425	425-430	430-435	435-440	440-445	445-450	450-455	455-460	460-465	465-470	470-475	475-480	480-485	485-490	490-495	495-500	500-505	505-510	510-515	515-520	520-525	525-530	530-535	535-540	540-545	545-550	550-555	555-560	560-565	565-570	570-575	575-580	580-585	585-590	590-595	595-600	600-605	605-610	610-615	615-620	620-625	625-630	630-635	635-640	640-645	645-650	650-655	655-660	660-665	665-670	670-675	675-680	680-685	685-690	690-695	695-700	700-705	705-710	710-715	715-720	720-725	725-730	730-735	735-740	740-745	745-750	750-755	755-760	760-765	765-770	770-775	775-780	780-785	785-790	790-795	795-800	800-805	805-810	810-815	815-820	820-825	825-830	830-835	835-840	840-845	845-850	850-855	855-860	860-865	865-870	870-875	875-880	880-885	885-890	890-895	895-900	900-905	905-910	910-915	915-920	920-925	925-930	930-935	935-940	940-945	945-950	950-955	955-960	960-965	965-970	970-975	975-980	980-985	985-990	990-995	995-1000	1000-1005	1005-1010	1010-1015	1015-1020	1020-1025	1025-1030	1030-1035	1035-1040	1040-1045	1045-1050	1050-1055	1055-1060	1060-1065	1065-1070	1070-1075	1075-1080	1080-1085	1085-1090	1090-1095	1095-1100	1100-1105	1105-1110	1110-1115	1115-1120	1120-1125	1125-1130	1130-1135	1135-1140	1140-1145	1145-1150	1150-1155	1155-1160	1160-1165	1165-1170	1170-1175	1175-1180	1180-1185	1185-1190	1190-1195	1195-1200	1200-1205	1205-1210	1210-1215	1215-1220	1220-1225	1225-1230	1230-1235	1235-1240	1240-1245	1245-1250	1250-1255	1255-1260	1260-1265	1265-1270	1270-1275	1275-1280	1280-1285	1285-1290	1290-1295	1295-1300	1300-1305	1305-1310	1310-1315	1315-1320	1320-1325	1325-1330	1330-1335	1335-1340	1340-1345	1345-1350	1350-1355	1355-1360	1360-1365	1365-1370	1370-1375	1375-1380	1380-1385	1385-1390	1390-1395	1395-1400	1400-1405	1405-1410	1410-1415	1415-1420	1420-1425	1425-1430	1430-1435	1435-1440	1440-1445	1445-1450	1450-1455	1455-1460	1460-1465	1465-1470	1470-1475	1475-1480	1480-1485	1485-1490	1490-1495	1495-1500	1500-1505	1505-1510	1510-1515	1515-1520	1520-1525	1525-1530	1530-1535	1535-1540	1540-1545	1545-1550	1550-1555	1555-1560	1560-1565	1565-1570	1570-1575	1575-1580	1580-1585	1585-1590	1590-1595	1595-1600	1600-1605	1605-1610	1610-1615	1615-1620	1620-1625	1625-1630	1630-1635	1635-1640	1640-1645	1645-1650	1650-1655	1655-1660	1660-1665	1665-1670	1670-1675	1675-1680	1680-1685	1685-1690	1690-1695	1695-1700	1700-1705	1705-1710	1710-1715	1715-1720	1720-1725	1725-1730	1730-1735	1735-1740	1740-1745	1745-1750	1750-1755	1755-1760	1760-1765	1765-1770	1770-1775	1775-1780	1780-1785	1785-1790	1790-1795	1795-1800	1800-1805	1805-1810	1810-1815	1815-1820	1820-1825	1825-1830	1830-1835	1835-1840	1840-1845	1845-1850	1850-1855	1855-1860	1860-1865	1865-1870	1870-1875	1875-1880	1880-1885	1885-1890	1890-1895	1895-1900	1900-1905	1905-1910	1910-1915	1915-1920	1920-1925	1925-1930	1930-1935	1935-1940	1940-1945	1945-1950	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	2050-2055	2055-2060	2060-2065	2065-2070	2070-2075	2075-2080	2080-2085	2085-2090	2090-2095	2095-2100	2100-2105	2105-2110	2110-2115	2115-2120	2120-2125	2125-2130	2130-2135	2135-2140	2140-2145	2145-2150	2150-2155	2155-2160	2160-2165	2165-2170	2170-2175	2175-2180	2180-2185	2185-2190	2190-2195	2195-2200	2200-2205	2205-2210	2210-2215	2215-2220	2220-2225	2225-2230	2230-2235	2235-2240	2240-2245	2245-2250	2250-2255	2255-2260	2260-2265	2265-2270	2270-2275	2275-2280	2280-2285	2285-2290	2290-2295	2295-2300	2300-2305	2305-2310	2310-2315	2315-2320	2320-2325	2325-2330	2330-2335	2335-2340	2340-2345	2345-2350	2350-2355	2355-2360	2360-2365	2365-2370	2370-2375	2375-2380	2380-2385	2385-2390	2390-2395	2395-2400	2400-2405	2405-2410	2410-2415	2415-2420	2420-2425	2425-2430	2430-2435	2435-2440	2440-2445	2445-2450	2450-2455	2455-2460	2460-2465	2465-2470	2470-2475	2475-2480	2480-2485	2485-2490	2490-2495	2495-2500	2500-2505	2505-2510	2510-2515	2515-2520	2520-2525	2525-2530	2530-2535	2535-2540	2540-2545	2545-2550	2550-2555	2555-2560	2560-2565	2565-2570	2570-2575	2575-2580	2580-2585	2585-2590	2590-2595	2595-2600	2600-2605	2605-2610	2610-2615	2615-2620	2620-2625	2625-2630	2630-2635	2635-2640	2640-2645	2645-2650	2650-2655	2655-2660	2660-2665	2665-2670	2670-2675	2675-2680	2680-2685	2685-2690	2690-2695	2695-2700	2700-2705	2705-2710	2710-2715	2715-2720	2720-2725	2725-2730	2730-2735	2735-2740	2740-2745	2745-2750	2750-2755	2755-2760	2760-2765	2765-2770	2770-2775	2775-2780	2780-2785	2785-2790	2790-2795	2795-2800	2800-2805	2805-2810	2810-2815	2815-2820	2820-2825	2825-2830	2830-2835	2835-2840	2840-2845	2845-2850	2850-2855	2855-2860	2860-2865	2865-2870	2870-2875	2875-2880	2880-2885	2885-2890	2890-2895	2895-2900	2900-2905	2905-2910	2910-2915	2915-2920	2920-2925	2925-2930	2930-2935	2935-2940	2940-2945	2945-2950	2950-2955	2955-2960	2960-2965	2965-2970	2970-2975	2975-2980	2980-2985	2985-2990	2990-2995	2995-3000	3000-3005	3005-3010	3010-3015	3015-3020	3020-3025	3025-3030	3030-3035	3035-3040	3040-3045	3045-3050	3050-3055	3055-3060	3060-3065	3065-3070	3070-3075	3075-3080	3080-3085	3085-3090	3090-3095	3095-3100	3100-3105	3105-3110	3110-3115	3115-3120	3120-3125	3125-3130	3130-3135	3135-31
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Punches.
Belt or Drive..... \$ 2.00; 2 1/2, 3.00; 4, 4.00; 5, 5.00; 6, 6.00; 8, 8.00; 10, 10.00; 12, 12.00; 14, 14.00; 16, 16.00; 18, 18.00; 20, 20.00; 22, 22.00; 24, 24.00; 26, 26.00; 28, 28.00; 30, 30.00; 32, 32.00; 34, 34.00; 36, 36.00; 38, 38.00; 40, 40.00; 42, 42.00; 44, 44.00; 46, 46.00; 48, 48.00; 50, 50.00; 52, 52.00; 54, 54.00; 56, 56.00; 58, 58.00; 60, 60.00; 62, 62.00; 64, 64.00; 66, 66.00; 68, 68.00; 70, 70.00; 72, 72.00; 74, 74.00; 76, 76.00; 78, 78.00; 80, 80.00; 82, 82.00; 84, 84.00; 86, 86.00; 88, 88.00; 90, 90.00; 92, 92.00; 94, 94.00; 96, 96.00; 98, 98.00; 100, 100.00; 102, 102.00; 104, 104.00; 106, 106.00; 108, 108.00; 110, 110.00; 112, 112.00; 114, 114.00; 116, 116.00; 118, 118.00; 120, 120.00; 122, 122.00; 124, 124.00; 126, 126.00; 128, 128.00; 130, 130.00; 132, 132.00; 134, 134.00; 136, 136.00; 138, 138.00; 140, 140.00; 142, 142.00; 144, 144.00; 146, 146.00; 148, 148.00; 150, 150.00; 152, 152.00; 154, 154.00; 156, 156.00; 158, 158.00; 160, 160.00; 162, 162.00; 164, 164.00; 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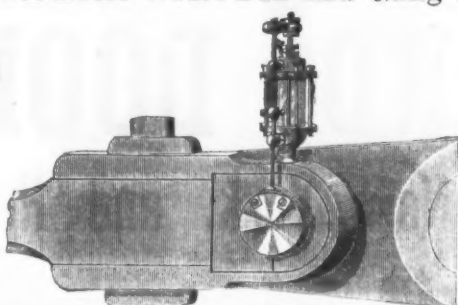
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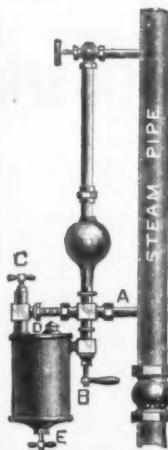
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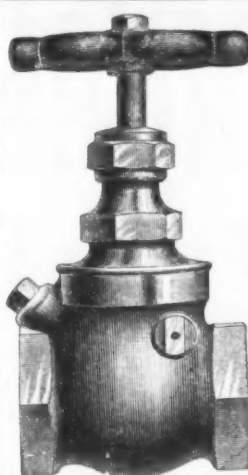
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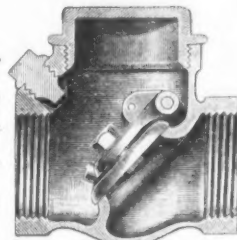
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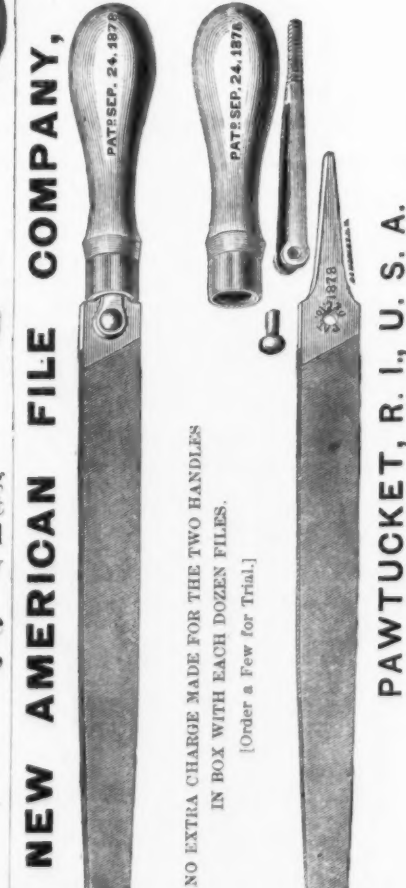


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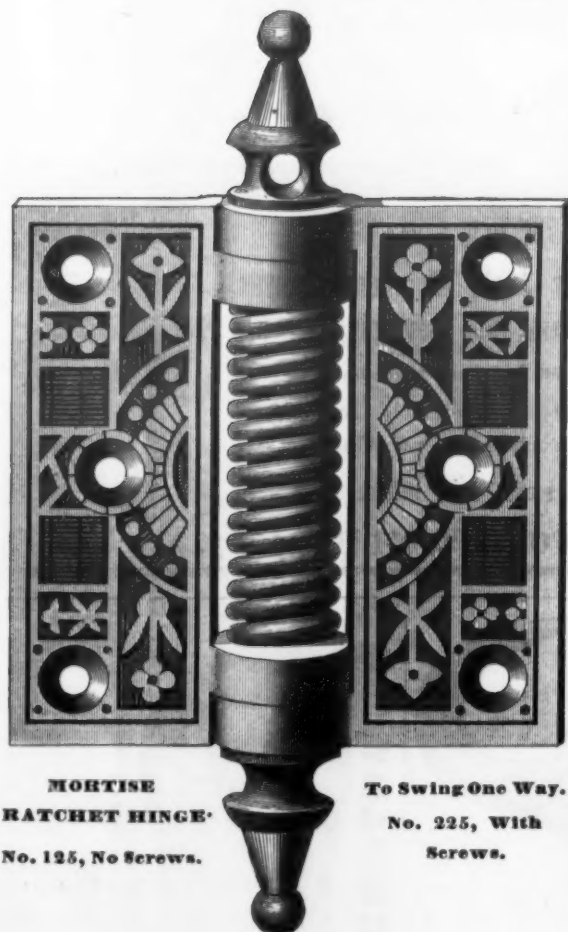
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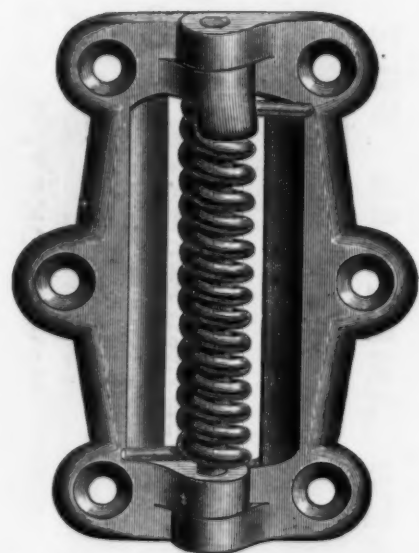
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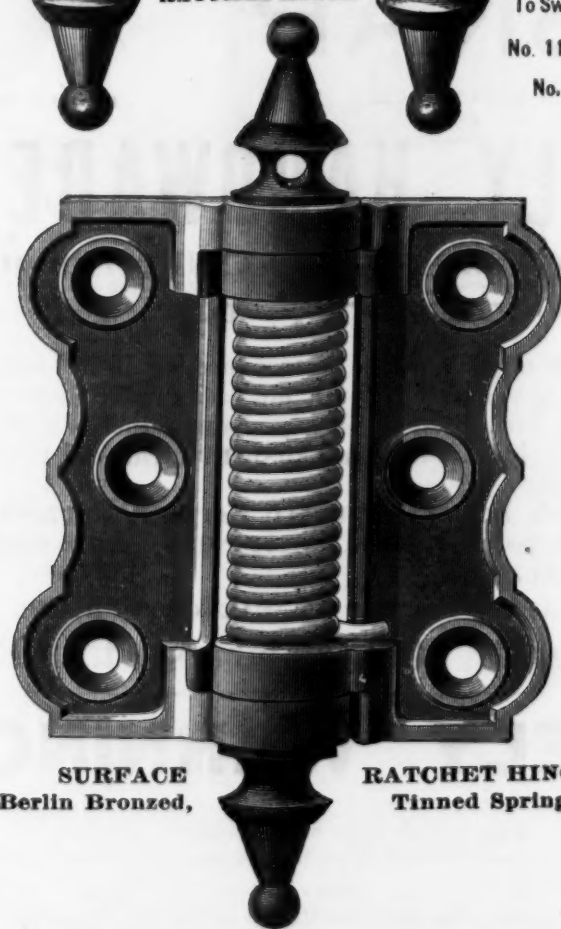
ORDER SPRING HINGES EARLY.

We now manufacture, at our works in New Haven, a full line of both Surface and Mortise Spring Hinges, as shown in the cuts on this page. Notice the design of our new Mortise Ratchet Hinges; the mechanism is the same as the Surface Ratchet Hinge; they are either right or left hand, and the tension can be adjusted quickly and easily. Tuscan Bronzed, Tinned Spring, and furnished both with and without screws.

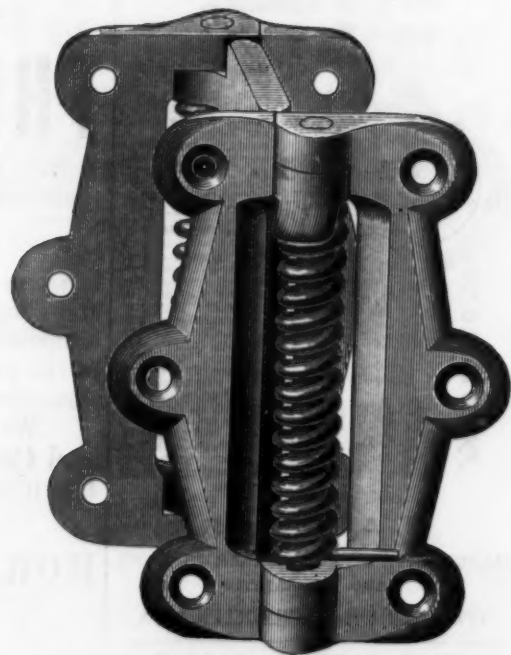
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SURFACE
RATCHET HINGE.
Berlin Bronzed,
Tinned Spring.



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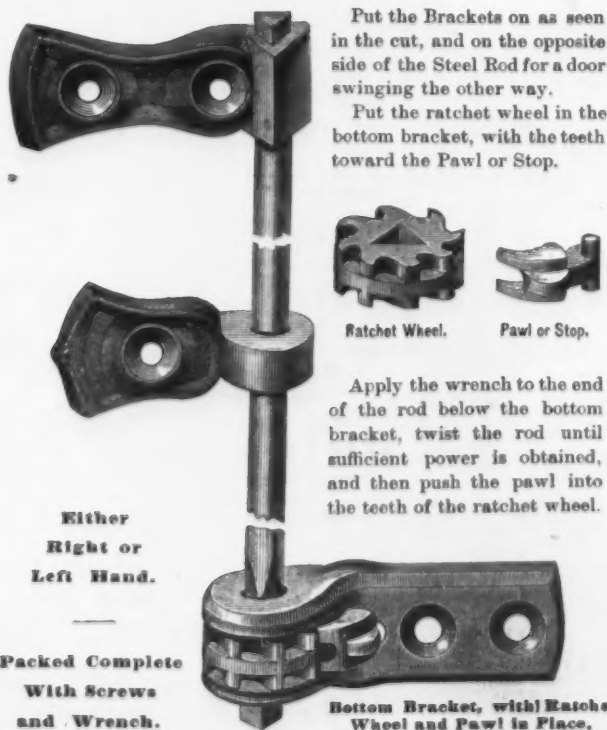
ROD AND COIL DOOR SPRINGS,

"S" DOOR SPRINGS.

TORREY DOOR SPRINGS.

THE VICTOR.

THE CHAMPION.



Put the Brackets on as seen in the cut, and on the opposite side of the Steel Rod for a door swinging the other way.
Put the ratchet wheel in the bottom bracket, with the teeth toward the Pawl or Stop.

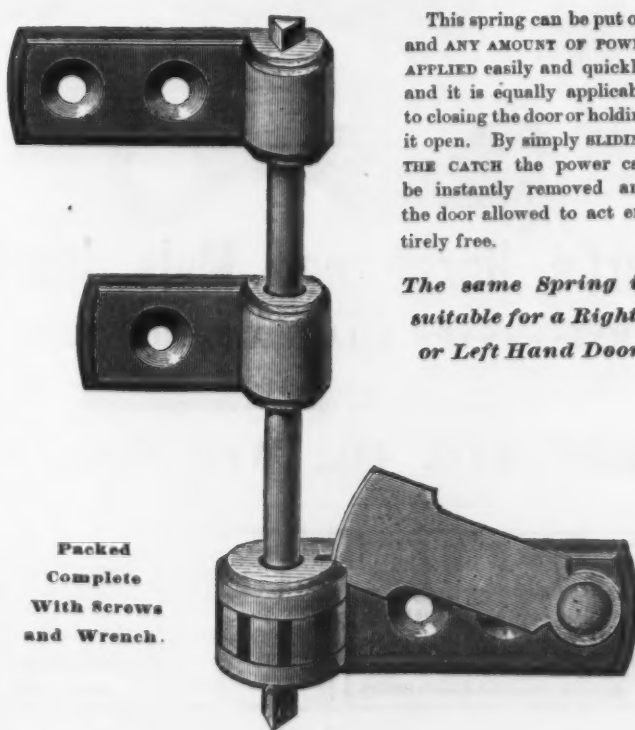


Apply the wrench to the end of the rod below the bottom bracket, twist the rod until sufficient power is obtained, and then push the pawl into the teeth of the ratchet wheel.

Either
Right or
Left Hand.

Packed Complete
With Screws
and Wrench.

Bottom Bracket, with Ratchet
Wheel and Pawl in Place.



This spring can be put on, and ANY AMOUNT OF POWER APPLIED easily and quickly, and it is equally applicable to closing the door or holding it open. By simply SLIDING THE CATCH the power can be instantly removed and the door allowed to act entirely free.

The same Spring is
suitable for a Right
or Left Hand Door.

Packed
Complete
With Screws
and Wrench.



BEST in the MARKET.

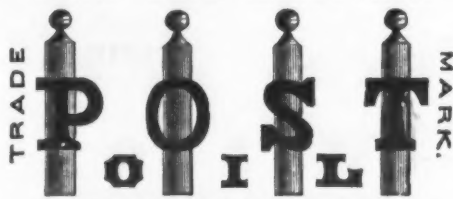
The mechanism for adjusting the Victor and Champion is the same.

Put on the spring diagonally, with the top always to the right. Put on the top bracket first, and as near the edge as possible. Then put on the bottom bracket, which also should be near the edge.

To tighten the spring, lift the collar or fastening; apply the wrench and tighten the spring as desired by turning to the left; when taut as wished, drop the collar back to place.

Easily adjusted. No pieces to lose. Tension can be applied or released instantly.

Post's Waterproof Belt Oil and Leather Preservative, FOR WET AND DRY LEATHER BELTING.



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Report of Prof. R. OGDEN DOREMUS.

New York, Feb. 18, 1881.

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Yours respectfully

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Prof. Chemistry and Physics in College City of New York.
Prof. Chemistry and Toxicology in Bellevue Hospital Medical College.

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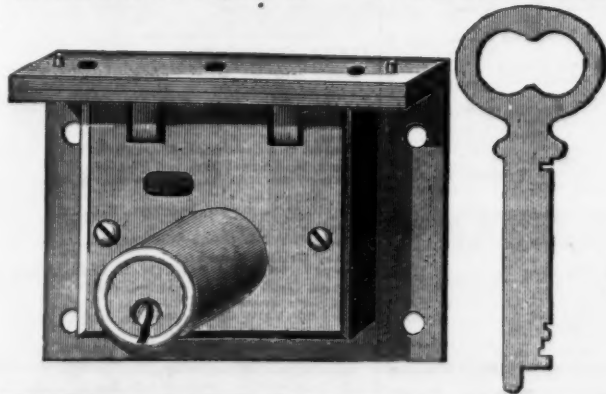
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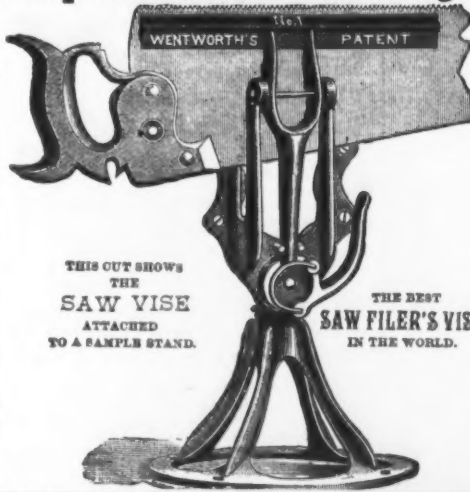
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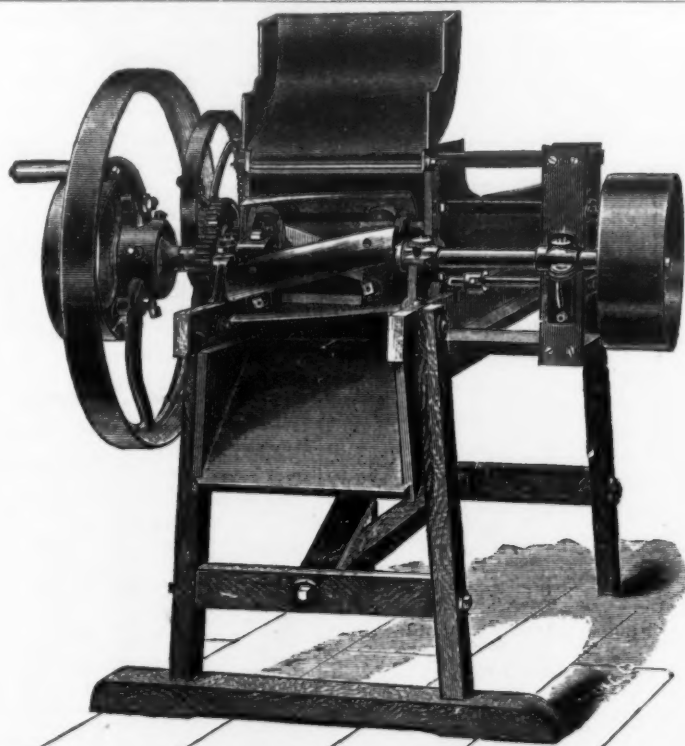
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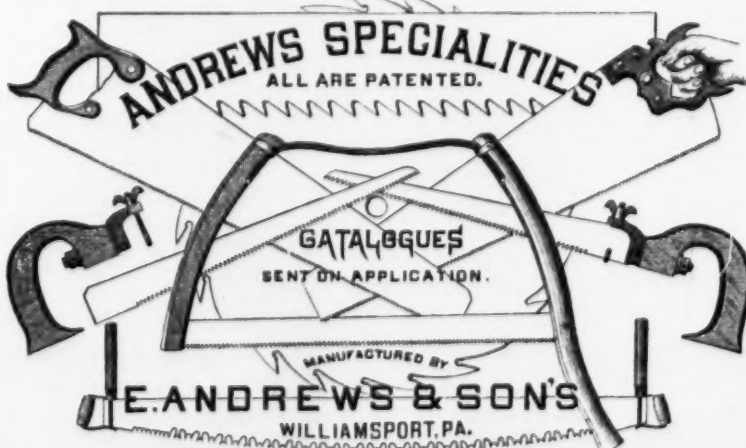
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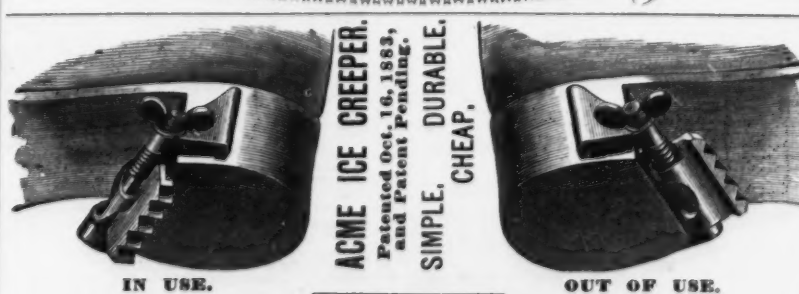
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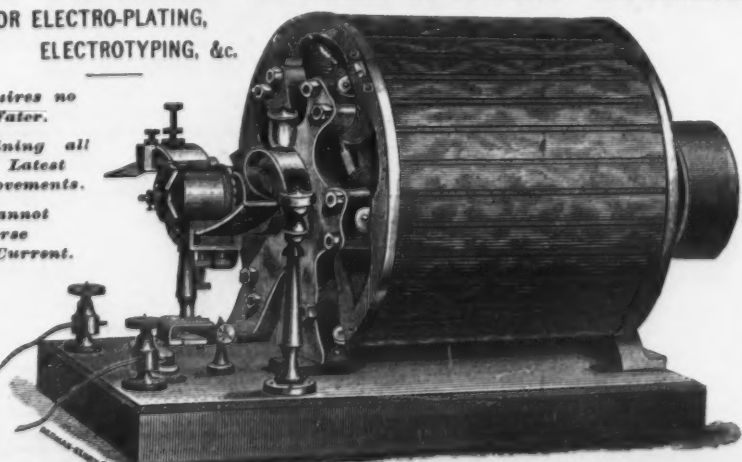
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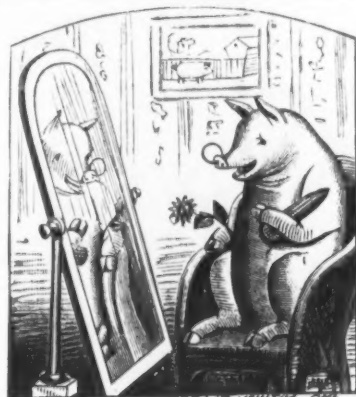
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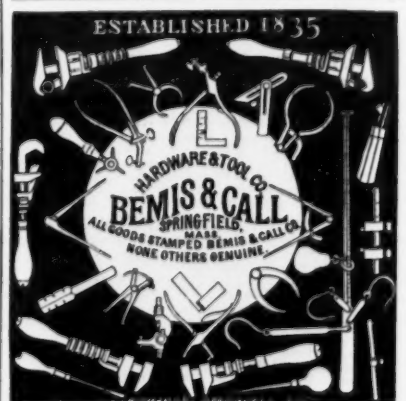
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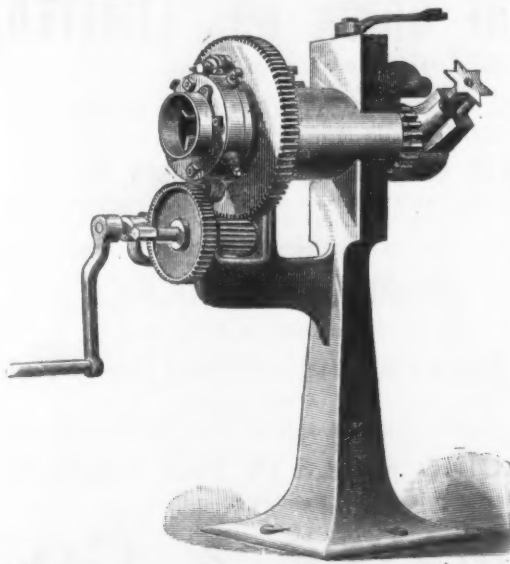
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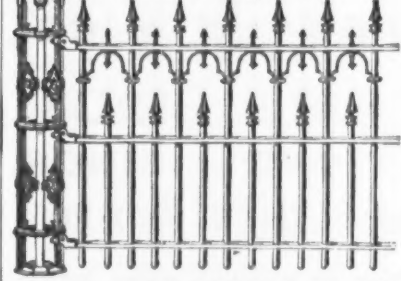
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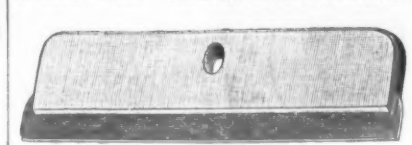
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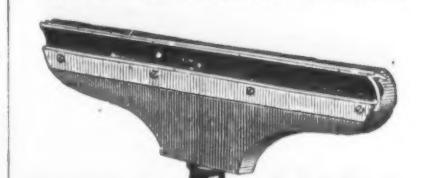
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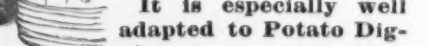
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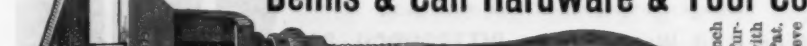
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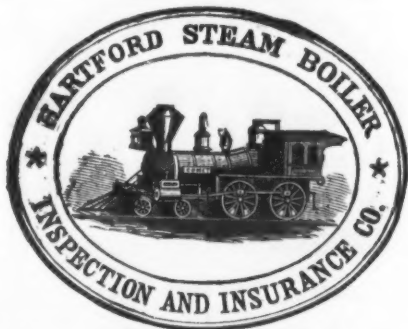
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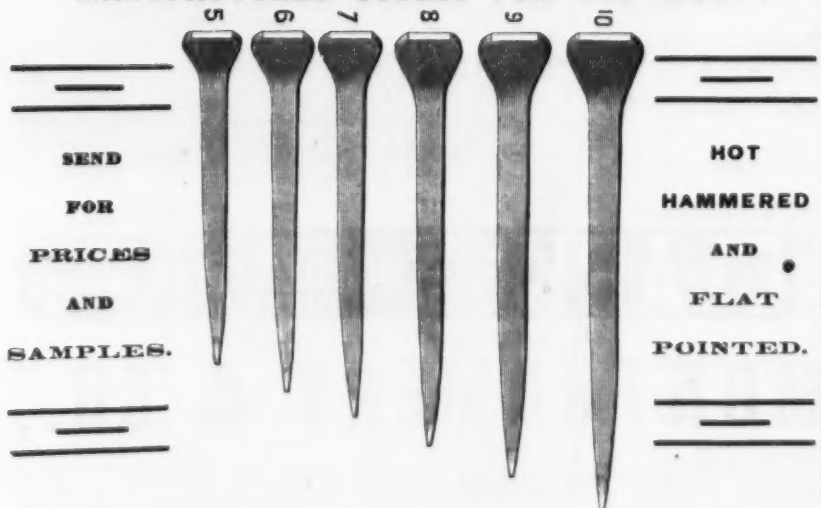
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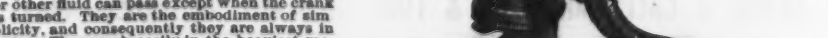
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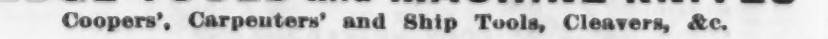
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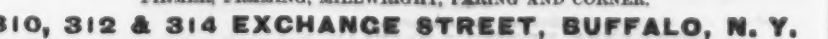
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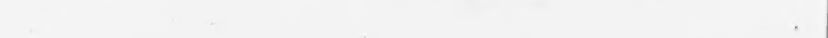
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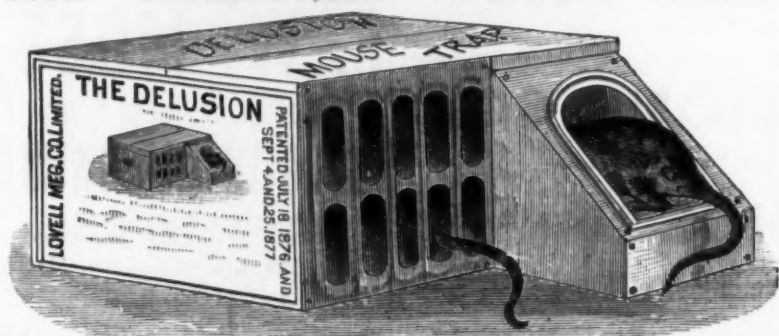
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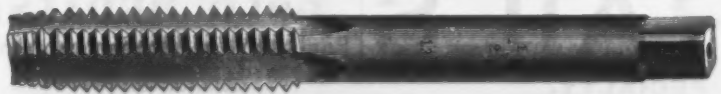
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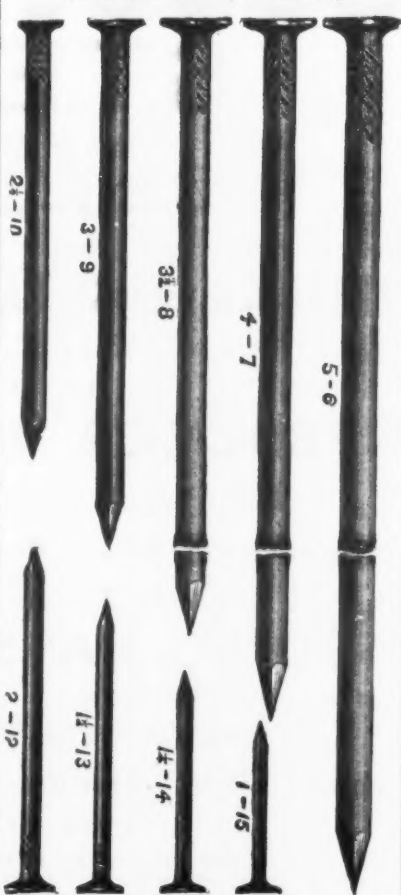
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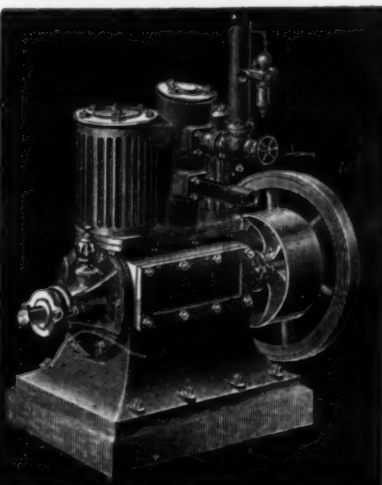
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TO THE TRADE.

GRAVITY SASH LOCKS.



Claim of Patent issued Sept. 4, 1883.

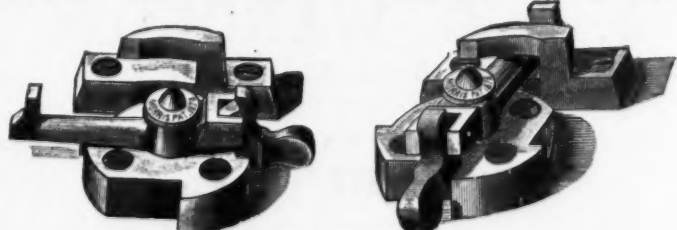
The improvement in Fasteners for the meeting rails of Window Sashes herein described, consist-
ing of the base plate provided with a rigid post, the sweep "C" journaled thereon and provided at its
inner end with a pivoted latch, having a forwardly-extending arm which engages with a rigid notched
or shouldered flange or plate, at the top of the post above the sweep, to lock the latter as described.
Having lately secured of the United States Patent Office the above claim, and as it does not in the
least infringe the rights of the Morris Sash Lock Manufacturing Co., we shall hold the said parties
responsible for all injury done our business by them, and shall protect our customers to the fullest
extent against all claims of infringement by said Morris Sash Lock Manufacturing Co.
Try our Gravity Sash Locks, as they are the best in the world.

THE KEMPSHALL MFG. CO.,

September 17, 1883.

New Britain, Conn.

THE MORRIS SASH LOCK,



MANUFACTURED BY
THE MORRIS SASH LOCK MFG. COMPANY,
MANUFACTURERS OF
SPECIALTIES, BUILDERS' HARDWARE,
Cincinnati, Ohio.

SPECIAL NOTICE TO THE HARDWARE TRADE.

When we published our Circular to the Trade in August last, in reference to the Kemp-
shall Gravity Sash Lock, no patent had been issued to the Kempshall Company. But to
our surprise the Patent Office last month granted them a patent, under which they are
claiming the right to make their Fasteners.

The application for this patent was made by one William E. Sparks, and we ask the
Trade to note that the Patent Office, in acting upon it, wrote an official letter, on the 18th
of last July, rejecting it on one Mr. Morris' patent of 1879, and saying:

"Morris, 22,487, Feb. 18, 1879, shows a Sash Lock which in every
"respect is equivalent to that shown and described in this (Sparks')
"application. It is considered a matter of no consequence that the
"latch engages with the notch in the bottom plate instead of a top plate,
"and it is held to be immaterial whether the locking notches are above
"or below the latch."

As the Patent Office in July thought the Kempshall Fastener the equivalent "in every
"respect," as they say, of the Morris Fastener, it will not be wondered at that we were
surprised they should in September grant a patent for it.

We have determined to test the right of this Sparks-Kempshall patent to continue in
existence, and we have therefore this week brought another suit against the Kempshall
Company, under Section 4918 of the United States Revised Statutes, to have the patent
declared void by the court, as being for substantially the same thing as our Mr. Morris'
prior patent.

The Trade therefore will please take notice, and are respectfully requested to await
the result of the litigation before being influenced by the Kempshall patent.
CINCINNATI, November 1, 1883. THE MORRIS SASH LOCK MFG. CO.

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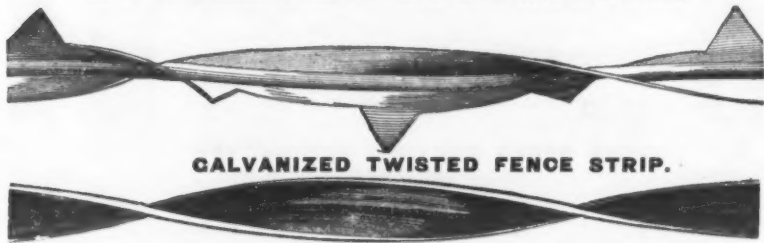
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See Page 3.

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Best, Cheapest and
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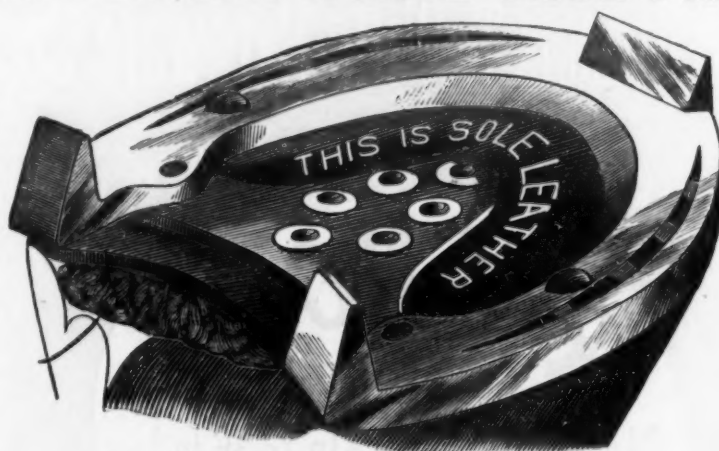
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Quality, finish and tests as to strength guaranteed equal to any in the market.

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Surpasses any Faucet in the Market.

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EMERY AND CORUNDUM WHEELS.

Can be run in WATER, OIL or ACID as well as DRY.

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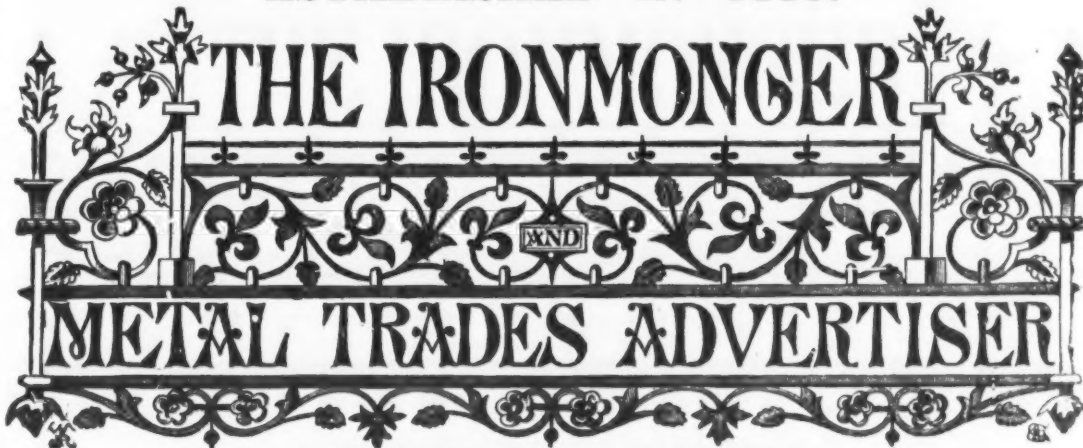
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so far as our experience of more than twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.

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AMERICAN TOOL COMPANY,
116 CHAMBERS STREET, NEW YORK,

are now Manufacturing a Fine Line of

Housekeepers' Tool Chests,

FITTED UP COMPLETE WITH USEFUL TOOLS.

ALSO MACHINISTS' EMPTY TOOL CHESTS.

Also a full line of all the other styles of Tool Chests manufactured by them. Our New Illustrated Catalogue for Fall Season of 1883 will be issued about August 15th, and will be furnished on application, with prices. Every dealer in Hardware, Machinists' and Railway Supplies should keep a stock of these goods on hand at all times to supply the constant and increasing demand. We are the only company in the United States who make a business of manufacturing Tool Chests exclusively.

OHIO STEEL BARB FENCE CO.

FOOT OF CASE AVE., CLEVELAND, OHIO.

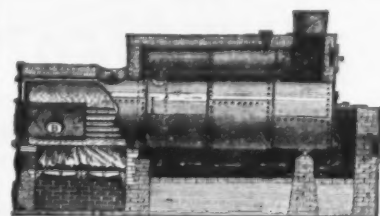
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Licensed.



The Lightest Four Pointed Barbed Wire in the Market.
THEREFORE THE CHEAPEST.

Orders from Eastern markets and Seaboard promptly filled from stock in New York City. Sample and Circulars furnished on Application.



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The Lowe Patent Tubular Boiler, with and without Superheating Drums. Fourteen years' use proves them the most durable and reliable boiler known. Gives dry steam. The process for combustion of the gases is in the construction and setting. Burns any fuel; obtains as much result from it as any boiler or setting with no more cost and greater durability.

Send for descriptive Circular.

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PRICES QUOTED ON
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R. T. PETTEBONE PATENT SHOVELS.

Back-Straps entirely protected from wear. Rivets also below line of wear.

Peculiar shape of Back-Straps positively prevents handles from working loose.

These Patent Shovels are stronger than the ordinary Back-Strap Goods, besides having all the merits of solid plain Back Shovels.

Specially adapted for Railroad and Miners' use. Superior quality and finish.

PAYNE PETTEBONE & SON,
WYOMING, PA.



BACK VIEW.

Front of Shovel has same general appearance as any ordinary Back-Strap Shovel.

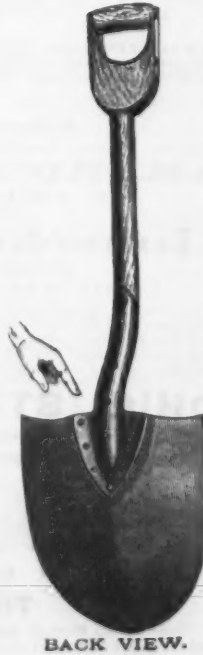
No obstruction on face of Patent Shovel to accumulate dirt when working in heavy soil.



Patent Protected Back-

Strap applied to our

Shovels.



BACK VIEW.

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MANUFACTURERS OF

DRILLED CAST BUTT HINGES,
AND

"CHINESE" LAUNDRY IRONS, SAD IRONS, &c.



"Chinese" Laundry Irons.

These "Chinese" Laundry Irons are of superior quality, made from the best pig iron, highly finished, and rounded on edges, having Wrought-Iron Handles, with neatly molded Tops of Cast Iron.

The Three Sizes, Nos. 1, 2 and 3, correspond in Weight with 4, 5 and 7 lb. Sad Irons.

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FACTORIES: Providence, R. I.

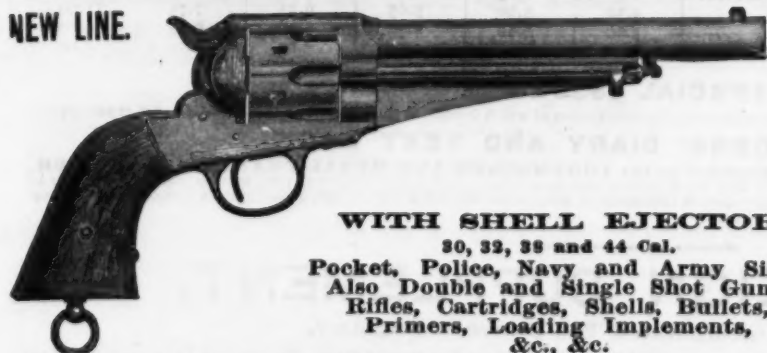
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Mica. Mica. Mica.

STOVE BOARDS, ZINC AND CRYSTAL,
Full Stock of Russia Iron from No. 8 to No. 15.

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NEW LINE.



WITH SHELL EJECTOR
20, 32, 38 and 44 Cal.

Pocket, Police, Navy and Army Sizes.
Also Double and Single Shot Guns,
Rifles, Cartridges, Shells, Bullets,
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Send for reduced catalogue and discounts of goods manufactured by

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Swivel Hooks for Rope or Chain,
POLISHED GROOVES, ALL SIZES IN STOCK.

Also Pulley Blocks for Wire Rope,
Headquarters for the

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CORRUGATED SHEET IRON.
MANUFACTURERS OF Superior Corrugated
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For Rolling Mills, Blast Furnaces, Foundries, Machine Shops, Car Shops, Boiler and Engine Rooms, Etc.
Fire, Water and Wind Proof. Light, Cheap and Durable.
Send for Descriptive Illustrated Catalogue.



Improved Champion Dump
Scraper.

We are the exclusive manufacturers of
**Byrket's Improved Dump and
Automatic Steel Scrapers.**

We manufacture the only successful Automatic Scraper in the world. Our Dumps are the lightest and strongest scrapers made. We use two pieces of steel pressed into shape, which is superior to the old method of using but one piece, for when that breaks the whole scraper is ruined, while ours is so constructed that we can replace any part at a trifling expense. We make three sizes, to meet the wants of all classes of Earth Workers. Especially suited for Contractors and Township Road Work. Send for circulars. Manufactured by

THE CHAMPION SCRAPER CO., Troy, Ohio.

The Francis T. Witte Hardware Co.

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VALUABLE TO CUTLERY AND SURGICAL INSTRUMENT
MAKERS, CONCAVERS OF RAZORS, AND EDGE TOOL GRINDERS.

P. LOWENTRAUT,
SOLE MANUFACTURER OF THE



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Light and Heavy Steel Ladles a Specialty.

HOUSE FURNISHING GOODS

AND **Shoemakers' Tools.**

276, 278, 280, 282 HALSEY STREET, NEWARK, N. J.

V. G. HUNDLEY,
PROPRIETOR OF
NORTH CAROLINA HANDLE CO.



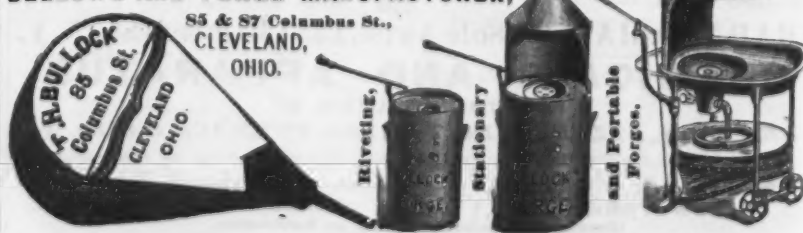
MANUFACTURER OF

Handles and Spokes.

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HARDWARE COMMISSION MERCHANT.

T. H. BULLOCK,
BELLOWS AND FORCE MANUFACTURER,

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CLEVELAND,
OHIO.



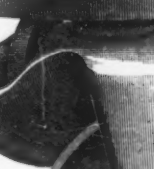
YALE CASTER.

Nine Sizes Ready.
Floor Wheels Ranging from 1 2-10
to 4 inches Diameter. For Furniture
of all kinds, Factory Trucks, or Any-
thing that Needs a Caster. No Wear-
in; of Carpets. Turns Easily on Two
Friction Rollers. A Perfect-Working
Caster. A Gem of Art.

AGENTS:

Henry B. Newhall Co., New York
and Boston.
John Duer & Sons, Baltimore.
H. H. & C. L. Munger, Chicago.
Gordon Hardware Co., San Francisco.

MANUFACTURED BY THE
YALE CASTER CO. New Haven, Ct.



*Full
Size
No. 15.
Floor
Wheels
15-10
in.
Diam-
eter.*

SEND FOR CIRCULAR.

GARDEN OR FARM BARROW

The illustration shows a portable cot designed for military use. The top part, labeled "SET UP FOR USE", shows the cot fully assembled as a four-wheeled carriage. It has a large, rectangular canvas-covered body with "JACOBS PAT" printed on the side. The front has a curved canvas flap, and the rear has a large, rounded canvas headrest. The cot is supported by a sturdy metal frame with four wheels. The bottom part, labeled "FOLDED FOR SHIPPING", shows the cot collapsed into a flat, rectangular bundle. The metal frame is folded down, and the canvas body is rolled up, making it compact for transport. The text "JACOBS PAT" is also visible on the side of the folded cot.

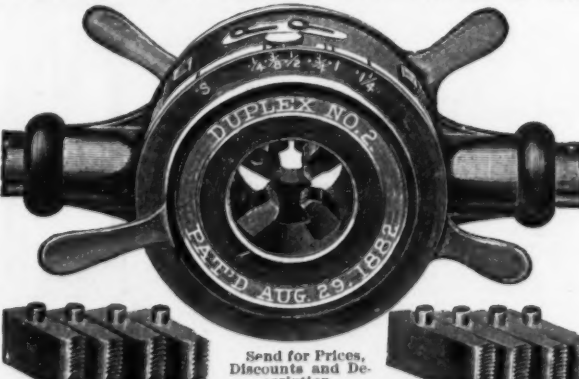
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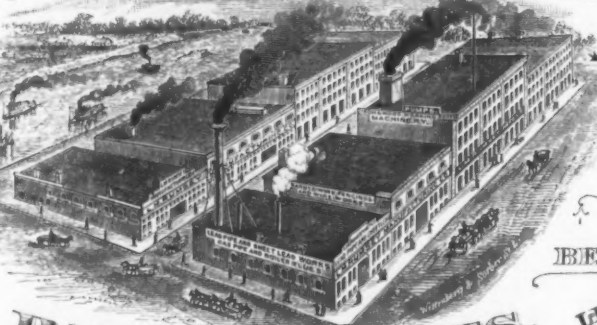
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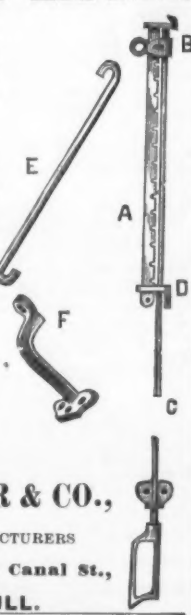
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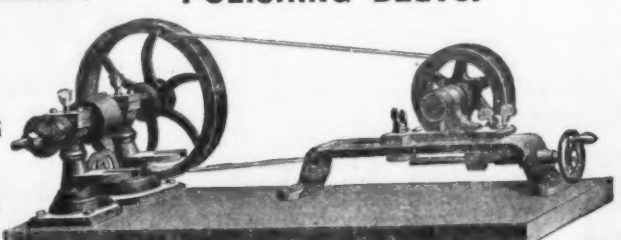
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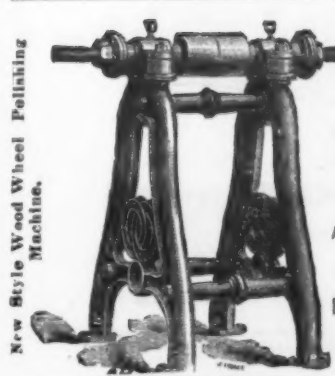
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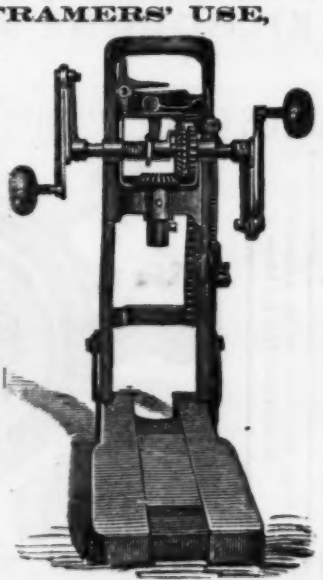


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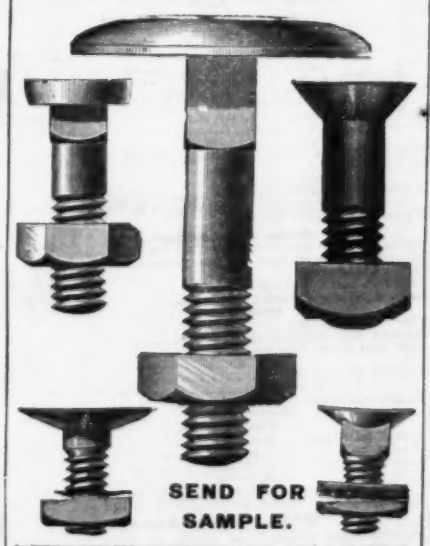


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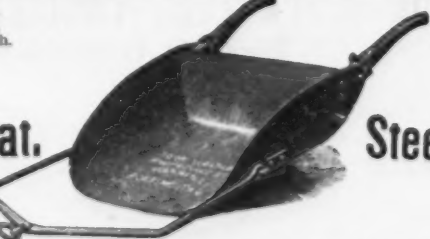
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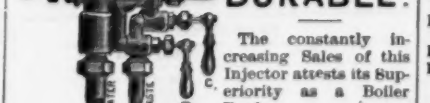
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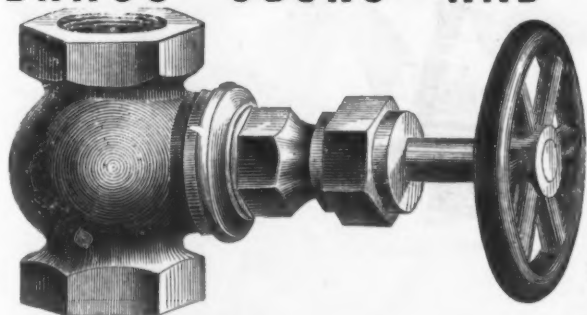
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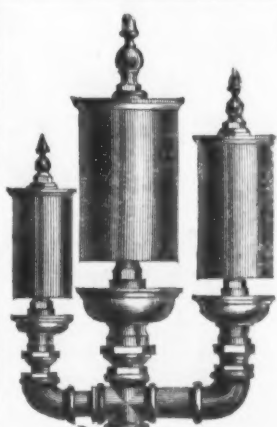
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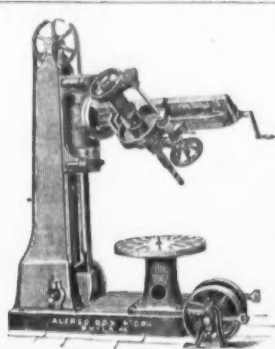
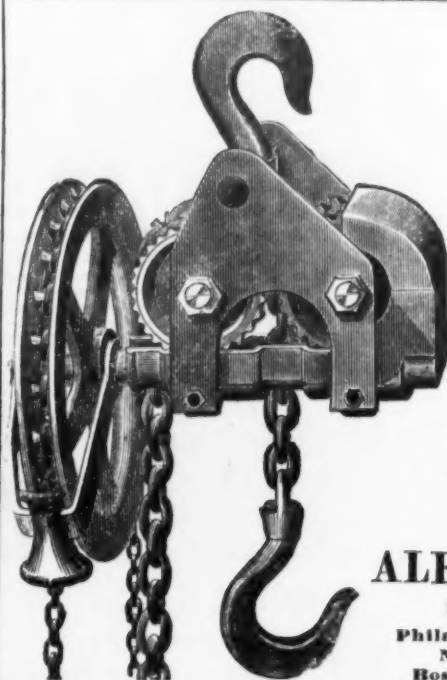
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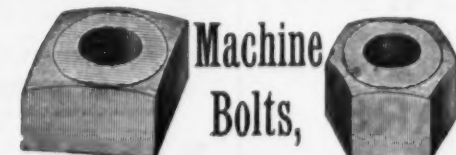
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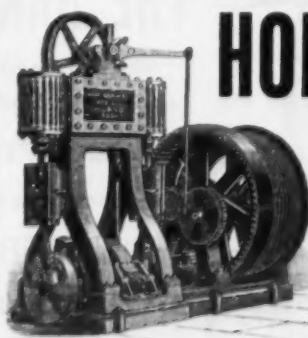
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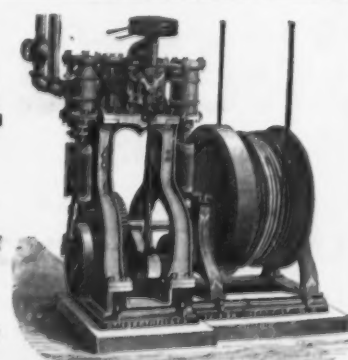
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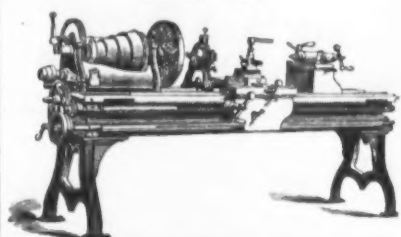


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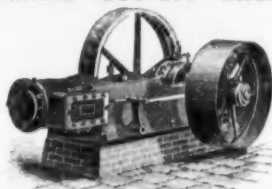
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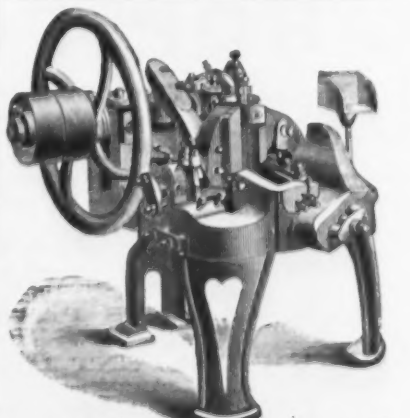
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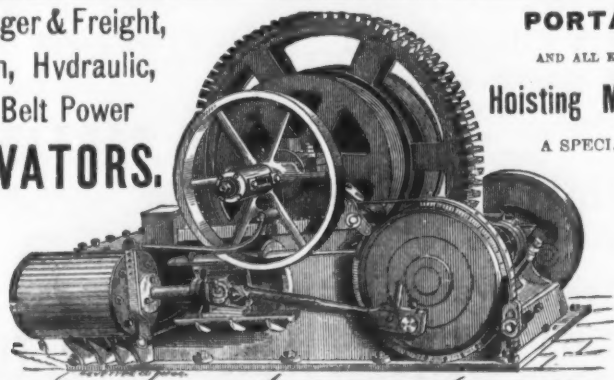
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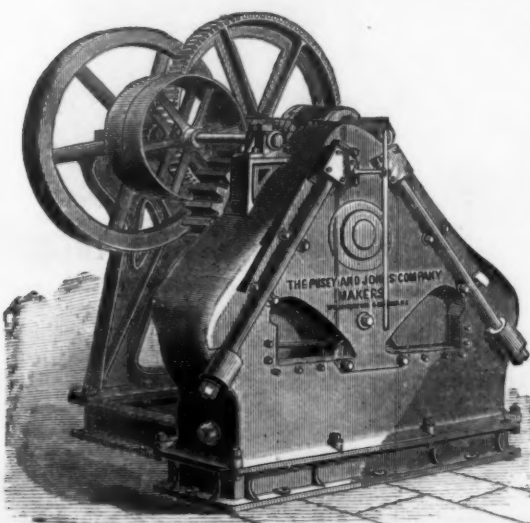
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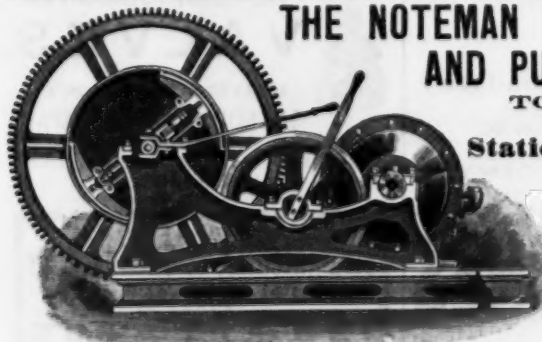
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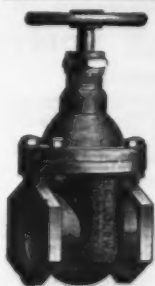
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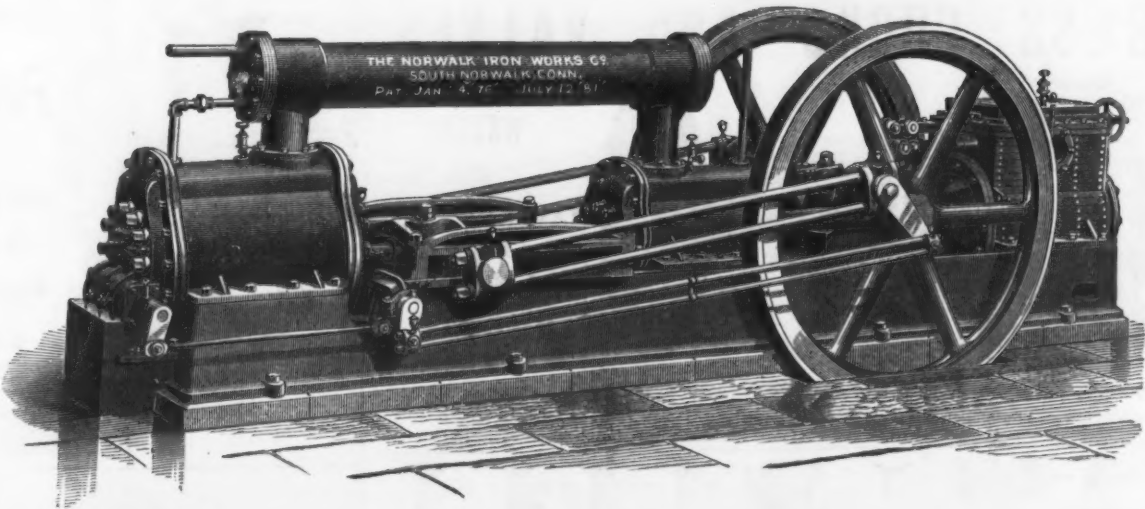
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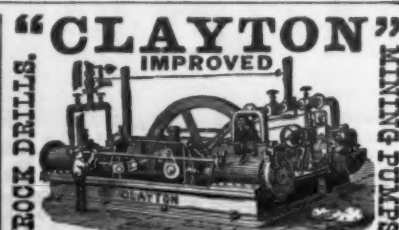
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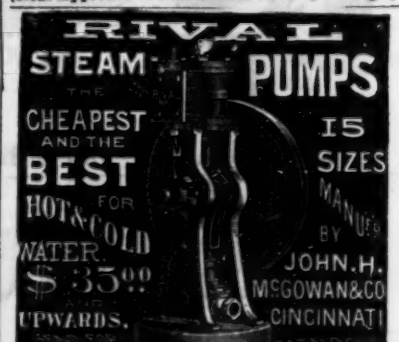
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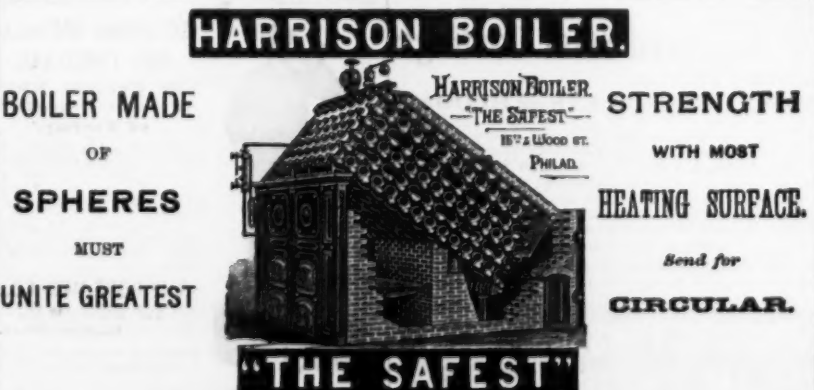
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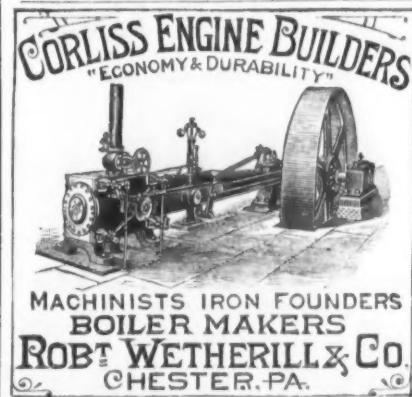
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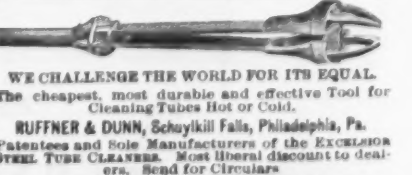
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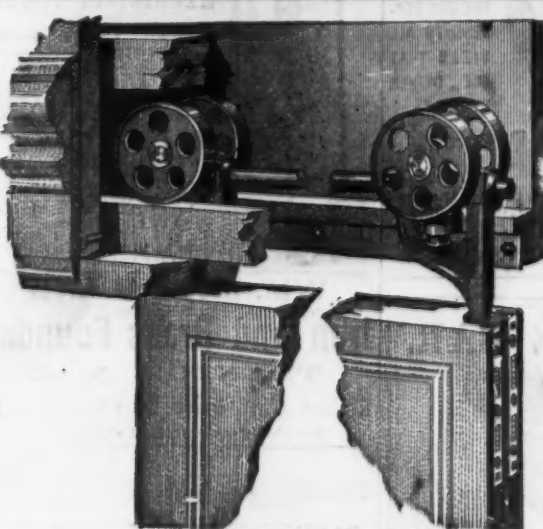
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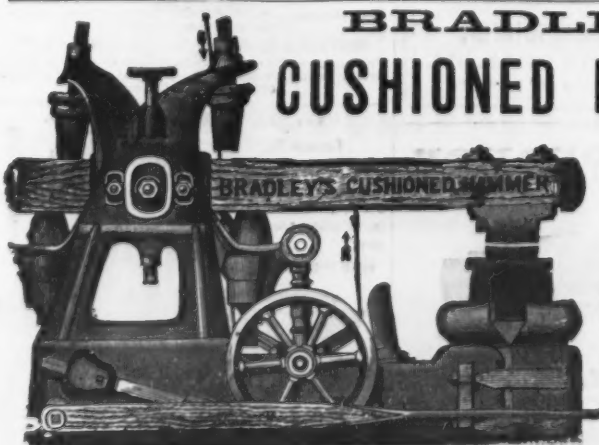
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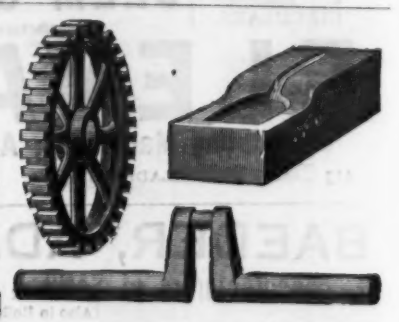
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